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AUTHOR Gage, N. L.; And Others
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ABSTRACT

This report on a Systematic Teacher Training Model deals with the operation of a teacher education program in providing practice for preservice and inservice trainees. Chapter I describes major program components: (1) selection, diagnosis (of trainee's needs), and placement; (2) programmed or nonprogrammed training and practice; (3) evaluation; (4) assignment and follow-up (or teacher critique); and (5) feedback to the trainee and the training system to serve as the basis for a new diagnosis. In chapter II, a discussion is presented on alternative kinds of practice, some dimensions along which they can be described, and some principles that may guide choices among these alternatives. A comprehensive list of teaching training material catalogs, developed from research studies, is included, as well as protocols available for improving teacher understanding of concepts and an overview of recent research on newer training methods. Chapter III offers a review of literature on the development and functions of teacher centers, with particular attention to kinds of guidelines and resources available to those interested in initiating or improving them. The final chapter, chapter IV, considers the future of "practice" in teacher education. (JD)

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Center for Educational Research at Stanford

A Systematic Teacher Training Model:

Part 2. The Practice Component of Teacher Education

N. L. Gage, Dale H. Schunk, and Alexis L. Mitman

Program on Teaching Effectiveness

September 1977

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SCHOOL OF EDUCATION STANFORD UNIVERSITY STANFORD, CALIFORNIA 94305 (415) 497-4717

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Chapter I. THE DIAGNOSIS OF NEEDS FOR TRAINING

In this part of the Systematic Teacher Training Model, we come to the heart of what the model is concerned with. Having set the scene by describing the steps and components of teacher education up to this point, we deal in this part with the operation of a teacher education program in providing preservice and in-service trainees with practice.

In general, as described in Chapter I of Part One, the operation consists of a recurring cycle of (a) selection-diagnosis-placement (or teacher inquiry), (b) programmed or nonprogrammed training and practice, (c) evaluation, (d) assignment and followup (or teacher critique), and (e) feedback, system revision. The trainee's needs are diagnosed, the proper kind of practice is prescribed and carried out, the trainee's performance at the conclusion of that practice is evaluated, the trainee or teacher is assigned and goes to work, and the information from the evaluation is communicated back to the trainee and the training system to serve as the basis for a new diagnosis. Then the cycle is repeated.

When the diagnosis shows a close enough approximation to the desired level of competence, the need for practice has been met. At that point, which may never be reached in practice even it it can be reached in principle, the teacher would be considered to be a finished peformer who no longer needs practice. Since even the most brilliant virtuoso in any performing art would never claim that he no longer needed practice, it seems safe to assume that, in principle, the teacher will never reach this point. But, as a matter of expediency, it is conceivable that the additional gain from further practice may not be worth its cost. At that point, practice may be terminated, until a subsequent diagnosis indicates that the need for practice has again arisen.

Within each of these major components--diagnosis, practice, evaluation, and feedback--the same cycle can be seen as intracomponent elements. Thus, the diagnosis can itself be analyzed into a diagnosis as to the nature of the kind of diagnostic process that is needed, the application of that diagnostic process, the evaluation of the results of that diagnostic process, and the feedback of the evaluative information to the performer of the diagnostic process. Similarly, within the practice component, the operator of the training program can conduct a diagnosis as to the kind of practice that is needed, an application of the practice process, an evaluation of the practice, and a feedback of this evaluation to the operator of the practice process. Within the evaluation component, a diagnosis can be made as to the nature of the proper evaluation procedure, that procedure can be applied, the evaluation procedure can be evaluated, and information concerning that evaluation can be given to the person who has planned and conducted the evaluation. Finally, within the feedback component, we can diagnose the kind of feedback called for, collect the appropriate kind of information, evaluate that information, and feed that information back to the person who conducted the feedback operation.

This set of comparable "atoms" within "molecules," or comparable processes within each of the major components of the training program, resembles the test-operate-test-exit (TOTE) unit formulated by Miller, Galanter, and Pribram (1960). In their formulation also, TOTE units could be found within and alongside other TOTE units in complex chains.

The procedures for diagnosing the trainee's needs can be arranged in an order of cost. Most expensive procedures should, of course, be used only when less expensive ones are found or suspected to be inadequate. We shall consider here:

(a) the general question approach,

(b) problem checklists,

(c) feedback from students,

(d) feedback from adult observers, and

(e) audio- and videotape recordings.

Finally, we shall take up the problem of converting data into a diagnosis, a problem that entails the educator's values.

The General Question Approach

First, the trainee can be asked to describe his own needs for training. The request can take the form of a simple question, posed orally or in writing: "What kind of improvement in your performance do you consider yourself to need?" "What kind of problem in teaching do you need help with?" "What aspect of your teaching is most bothersome?" "What is your biggest problem as a teacher?" The appropriate questions can be put in many ways, but all of them require the teacher to look within himself or herself. The teacher ponders her experiences inside the classroom, in the playground, the study hall, in the place where she works to prepare for teaching.

Broad, unstructured questions of this kind have advantages in being simple and straightforward. Because they are unstructured, they do not impose upon the trainee any preconceived set of dimensions or problems. So the answers are likely to be put in terms that teachers themselves use in thinking about their work. If the teachers use the concepts of professional educators--or what critics would call the jargon of education--their replies can be readily understood by other teachers and teacher educators. But, in this approach to diagnosis, the teachers may use everyday language that needs to be translated into the terms and concepts of professional education, including those aspects of psychology, sociology, and the behavioral sciences at large, that have been applied to the problems of teaching.

Experience with this broad-question approach suggests that teachers will often give answers that are too general or unfocused to be useful. One teacher will say, "I have trouble motivating some of my students." Others will provide brief mentions of such problems as "discipline," "planning," "individual differences," "grouping," and so on. Or the answers will depend too heavily on what happens to be salient in the teacher's thinking at the moment. Today's experience may make the teacher think of a problem that actually occurs less often or severely than one that occurred much more often but not today. Another problem is that teachers may tend to speak in terms of symptoms rather than the root causes at which training should be aimed. Finally, the advantage of allowing the teacher to provide his own structure is accompanied by

the disadvantage that the teacher will simply not happen to think of all the matters that ought to be considered as he or she tries to identify problems in teaching at which training should be aimed.

Problem Checklists

For these reasons, a second approach to diagnosis suggests itself--the problem checklist, questionnaire, inventory, and the like. Here, lists of possible problems are presented as simple phrases or questions. The teacher responds with an indication of whether or not the problem occurs for him or her.

Such checklists, e.g., the Mooney Problem Checklist (Buros' Mental Measurements Yearbooks) and the SRA Youth Inventory (ibid.), have long been useful to educators, especially counselors, in helping students be more articulate about their personal problems. The checklists are also useful in providing some kind of categorization of the problems, so that they can be more readily described as to whether they are problems of physical appearance, boy-girl relationships, health, study habits, athletic ability, popularity, or whatever. Buros' Mental Measurements Yearbooks, in their various editions, have contained long bibliographies of studies testifying to the usefulness of such checklists in working with students.

For teachers, such instruments would have similar advantages. In the Teachers Problem Checklist: Secondary Form (Cruickshank, Kennedy, & Myers, 1976), the items take the following form:

"I HAVE A PROBLEM . . ."

FREQUENT						BOTHERSOME				
Always		Occasionally		Never		Extremely		Somewhat		Not at all
5	4	3	2	1	1. Providing for individual learning differences	5	4	3	2	1
5	4	3	2	1	2. Eliminating practices which upset my students	5	4	3	2	1

The construction of such checklists can be relatively inexpensive. One set of rubrics of teaching problems might be the following:

Problems in formulating educational, instructional, or learning objectives.

Problems in understanding students--their abilities, personality characteristics, motivation, values, developmental level, etc.

Problems in motivating students.

Problems in choosing appropriate types of teaching methods--recitation, tutoring, lecturing, small-group discussions, role-playing, etc.

Problems in carrying out or using any particular teaching method.

Problems in coping with differences between students in ability and interests.

Problems in measuring and evaluating student achievement.

Problems in maintaining group discipline and managing the class.

Problems in planning, selecting, and constructing curriculum materials.

Problems in grading and reporting pupil achievement.

Problems in developing productive relationships with parents, other teachers, and school administrators.

Under each of these headings, it is easy to list many specific problems. The problems could be presented to teachers organized in these headings. Or they could be presented in scrambled form. In the latter event, the scoring of the teachers' responses could be organized so as to reveal the relative severity of problems in the various categories even through the teacher had not responded with those categories in mind.

Fuller (1974) has developed a Teacher Concerns Checklist based on a developmental conception. As teachers progress in their training and careers, their concerns develop from a focus on self and self-protection to a focus on relationships with others and pupil learning. This flow from Self (trainee) to Task (teaching) to Impact (pupil) is reflected in responses to items such as the following in each of these categories: Self (Whether the students really like me or not); Task (Too many students in each class); and Impact (Motivating students to study).

Such problem checklists can call upon the teacher to respond to each item by itself, as in indicating whether the problem "exists" or "does not exist," or that it is "extremely serious," "very serious," "serious," "moderately serious," or "nonexistent." Or the teacher can be asked to compare the various kinds of problems with one another, as in indicating whether problem A is more or less serious than problem B. Here the teacher is required to make a choice between problems and is not permitted to respond in such a way as to indicate that all problems are extremely serious or all problems are nonexistent. Such a "forced-choice" arrangement makes the teacher choose and indicate, in a way that provides a kind of rank ordering, which kinds of problems are more serious than others.

Another arrangement allows the teacher to respond to each item, or problem, by itself, but also requires her to put them in a kind of rank order. This arrangement rules out assignments of the same rating, or "ties," to two or more problems, and it makes possible both absolute ratings of each problem in the set and a rank ordering of the problems in that set.

Closely related to problem checklists are teacher self-rating systems. Simpson (1966) suggested ways in which the teacher can rate his or her own knowledge, methods of developing goals and procedures, selection of texts and other resources, personality, and relations with colleagues. Among the procedures he suggested were the teacher's written assessment of his teaching, the achievement of the teacher's students on tests of various kinds, the teacher's working with colleagues on self-evaluation problems, the teacher's engaging in professional reading pertinent to his or her self-evaluation, the analysis of class sessions, and the use of selected individual pupils in discussions.

Feedback from Students

Another approach to the teacher's diagnosis of his or her problems is feedback from students. Obviously, students observe the teacher more hours per day and in larger numbers than any other category of persons does. The fact that they do so in large numbers makes the average of their observations likely to have a high degree of reliability.

In many ways, students' observations and ratings of a teacher also have, almost by definition, a kind of validity. That is, if students say that something is true, that something is true in the eyes of the students. It therefore has at least one kind of importance, even if that thing is not objectively true as determined by an objective measurement or the observations of an unbiased expert.

At the college level, students' ratings of instructors have been used with increasing frequency since the middle 1920s, when H. H. Remmers at Purdue University published a monograph, The College Professor as the Student Sees Him (see Remmers, 1963). By the middle 1970s, the literature on students' ratings had expanded tremendously. New publications appeared frequently. Many colleges and universities have adopted the practice. Workshops are being held to disseminate the rationales and techniques of student-rating-of-instructor programs. Thus, the program of the 1976 meetings of the American Educational Research Association noted that the AERA Training Committee presented a minicourse on "Developing a Program for the Evaluation of Teaching in Institutions of Postsecondary Education:"

> This minicourse is designed to instruct educational researchers on faculty evaluation programs with complete historical, theoretical, and practical information from five different programs around the nation which have been working on the problem for several years.

At the college and university level, students' ratings of instructors are used for two major purposes: (a) to provide a basis for administrative decisions concerning promotions in rank and pay and (b) to provide instructors with bases for the improvement of their teaching. We are concerned with the latter purpose here, especially as it applies to the improvement of teaching in elementary and secondary schools. For the former, or administrative, purposes such a rating need only be general, and the number of items can be small. But, for the second, or diagnostic and remedial purposes, the rating items should be as specific, detailed, and numerous as the teacher may want them to be (Gage, 1974). This reasoning also applies to instruments for students' ratings of elementary and secondary school teachers.

In the elementary and secondary schools, special care must be taken that the items are appropriate to the maturity of the students. It has been possible to obtain reliable mean ratings of teachers from pupils at grade levels as low as the fourth. The questions can deal with all the different aspects of teaching with which the teacher may be personally concerned--with problems of interest and motivation, appropriateness of discipline, the teacher's likability, the fairness of tests, the variety of activities, and so on.

One problem with the use of students' ratings is the halo effect--the tendency of students to respond in accordance with their general overall favorability toward the teacher rather than in terms of the specific content of a given item. At Stanford University, Beck (1964) attempted to develop an instrument that would obtain ratings by sixth-grade students of teachers on five different kinds of teacher "merit" or effectiveness--cognitive, affective, motivational, disciplinary, and innovative. It was subsequently found through various factor analyses also conducted at Stanford University, especially that by Zwirner, Cronbach, Gage, and Beck (1972), that most of the items had significant loadings on a single general favorability factor. The pupils did not discriminate--at least in a way that could be inferred from the intercorrelations of their responses to the items--between cognitive and affective merit. This was the case even though adult judges were able to agree in classifying and distinguishing between the items in these two categories. Thus the logical distinction between these two kinds of teacher merit was not verified empirically in pupils' perceptions of their teachers. In short, although pupils' ratings have great value in an overall sense, it is still questionable whether they can be used in any highly diagnostic way, simply because of the power of the halo effect.

Loeding (1976), in an investigation conducted at Stanford University, attempted to develop "low-inference" items with which pupils could describe teacher behavior in ways that would agree with teachers' descriptions of their own behavior. Such items would make possible very economical ways of describing and diagnosing teacher behavior, since the inexpensively obtained teachers' self-descriptions would have been borne out, or

validated, by the descriptions obtained from the teacher's pupils on the same items. But Loeding was able to find only 38 items, out of 150 items tried, in which teachers' self-ratings and pupils' mean ratings of teacher correlated substantially. Nonetheless, Loeding's work indicated that such an approach might be worth further development. The 38 items that survived his various criteria were reliable, in that pupils agreed substantially with one another in describing their own teacher on a given item. The items were also valid, in that teachers' self-descriptions agreed at least moderately well with the mean ratings by the pupils in describing their teacher on the same item.

In short, ratings of teachers even by young pupils may offer a promising source of diagnostic information concerning a teacher's problems and needs. Such ratings are a relatively inexpensive source of information and are readily available to any teacher who wants to use them.

Yet, in the view of some educators, asking pupils for their descriptions, evaluations, or ratings of a teacher tends to subvert the teacher's authority. Asking such questions is, in this view, objectionable in itself since it implies that teachers ought to be subjected to pupil evaluation rather than the other way around. Although this somewhat authoritarian view of the teacher-pupil relationship may not nowadays be prevalent, a word concerning it seems appropriate here. The response may well be that the teacher has no choice as to whether he or she will be evaluated by pupils. The teacher's only choice is that of whether to be informed about the pupils' evaluation. Further, in most present-day school settings, it is conceivable that pupil morale, and the feelings of their parents about teacher-student relationships, will be enhanced by the teacher's seeking such information from pupils.

Feedback from Adult Observers

Another source of information concerning a teacher's needs or problems--one that has been widely used in the last 15-20 years--is observations by adults of one kind or another. The observers may be fellow teachers, supervisors in the school system, or graduate students from nearby colleges and universities, the latter usually being engaged in a research project of some kind. Instruments for the description of

teaching by such observers are presented in the hundreds in Mirrors for Behavior (Simon & Boyer, 1970). The most widely used of these instruments, for research as well as for teacher training, is that developed by Flanders (1970)--the Flanders Interaction Analysis Categories (FIAC). That instrument is well known, and descriptions of it are widely available. The FIAC system is primarily concerned with social and emotional dimensions of teacher-pupil interaction. It throws no light on the logical, cognitive, or intellectual aspects of what teachers say and do in the classroom or how they interact with their students along these lines. Other instruments, such as those developed by Gallagher and Aschner, by Smith and Meux, by Bellack and his co-workers (see Simon & Boyer, 1970), do provide some information concerning the cognitive, or intellectual, dimensions of teacher behavior.

These instruments for use by adult observers are primarily descriptive. Evaluations based on them must be superimposed by the teacher interested in self-improvement. Such evaluations must, in turn, be based upon some conception of what is desirable in teacher-student interaction. That conception takes many forms and often reflects what Dunkin and Biddle (1974) have termed a Commitment--a conviction that teacher "indirectness," "warmth," "enthusiasm," "logicality," "discovery teaching," "level on the taxonomy of educational objectives," or some other characteristic, is desirable or necessary in teaching. All of these dimensions have been the bases of commitments in the literature on how teachers should teach--a literature that has been heavily laden with such commitments over many decades.

Some of these commitments have been supported by the empirical studies of relationships between various kinds of teacher behavior, on the one hand, and student achievement and attitude, on the other. The reviews by Rosenshine (1971) and by Dunkin and Biddle (1974), especially when interpreted in terms of the significance of combined results (Gage, 1977), contain support for some of these commitments as bases for criteria usable in evaluating teacher behavior on the basis of descriptions obtained from observers.

Thus, some trends in the research literature make such evaluations not altogether unjustifiable. When the significance of combined results

is taken into acccunt, such variables as teacher "indirectness" and teacher "criticism and disapproval" do appear to be desirable and undesirable, respectively. These conclusions are supported when a whole cluster of correlational or experimental studies is considered at once. Two reasons why the individual studies often yield statistically nonsignificant results are that (a) they are based on small samples, averaging about 15 teachers, and (b) the relationship, or correlation, should not be expected to be greater than about .3 for any single teacher dimension. But when the studies are considered as an entire cluster, statistically significant trends do emerge.

A teacher can obtain such observations from an adult observer with substantial reliability only at some fairly considerable cost in the training of the observer. That is, such instruments are not easy to use. Typically, the observer must undergo at least several hours of training, and often the training requires some days or weeks of effort before the observer is sufficiently skilled to be able to use the instrument with accuracy and facility. If a check on the accuracy, or reliability, of the adult observer is to be obtained, at least one additional observer must be trained. Further, the time of an adult observer, unless it is that of a graduate student who will use the data for his dissertation, or that of a research assistant whose time is being paid for by the funds of a research project, can seldom be bought by the individual teacher. Instead, if the aforementioned research-project sources are available, school systems will need to furnish the funds with which to employ such adult observers. Assuming that adult observers would need to be paid approximately $5.00 per hour for their skilled work, we find the costs of obtaining adequate adult observation, in view of the numbers of hours of observation needed per teacher and the numbers of teachers to be observed, to become prohibitive. Unless the financial support of in-service and preservice teacher training is radically increased, it seems unlikely that adult observers will be made routinely available in the numbers of man-hours needed to have a significant effect on the improvement of teaching in the United States.

There is, however, one possibility that may save this approach. The teacher's fellow teachers may be able and willing to obtain the training and take the time needed to provide any given teacher with information of this kind. Teachers would need to form partnerships or trios. They would need to examine the literature and come to an agreement on the observation schedule that would yield the kind of information considered most valuable for their purposes. Then they would take turns in observing one another's classes until they became proficient enough in using the instrument to agree with one another, operating as a two-teacher team, in their observations of the third member of the trio.

One instance of teacher teams working on the diagnosis of teachers' needs and problems is found in the work of Washington (1971). Another scheme for "collegial" evaluation of this kind has been developed by Roper and others, in the Program on the Environment for Teaching of the Stanford Center for Research and Development in Teaching (Roper, Deal, & Dornbusch, 1976). In this arrangement, teachers formed partnerships with another teacher in their school--a teacher with whom they could expect to be able to work compatibly. The partners agreed on a set of "criteria" by which they wished their teaching to be judged. After thorough discussion by the partners concerning the selection and definition of the criteria, each teacher observed his or her partner in the classroom and rated the partner on a set of scales that operationally defined the criteria. The teachers then discussed the ratings, the degree to which they reflected desirable or undesirable kinds of teacher behavior, and ways in which the observed teacher could undertake to improve his or her performance on any criterion. After some attempt to improve had been made, the teacher was subjected to a follow-up observation by his partner. The process was repeated as the school year went on.

In the report by Roper, et al. (1976), this procedure seemed workable. It was sufficiently inexpensive of teacher time and nonthreatening enough to be acceptable to the teachers who used it. But no data have yet been obtained on the degree to which the procedure resulted in changed behavior on the part of the participating teachers. Obviously, such data are desirable. Even more, it would eventually be necessary to have data not merely

on the degree to which teacher behavior changes but also on the degree to which student achievement and attitude are improved.

One extremely important advantage of this approach is that it seems to be acceptable to teachers. Teachers can thus have a kind of control over the evaluations of themselves. This is the kind of control that can be achieved through collaboration with a sympathetic, compatible, like-minded, and respected fellow teacher. Other approaches, which involve observations by outsiders, have often lacked this important element of acceptability. Supervisors, principals, and even research workers such as graduate students, have often seemed threatening enough to make the use of their observations unworkable as a routine matter. The damage to teacher morale, feelings of security, and sense of professional autonomy has sufficed to make these other kinds of observers go by the board whenever attempts have been made to use them on any adequate scale.

Audio- and Videotape Recordings

Since the early 1960s, the equipment for making audiotape and videotape recordings has become inexpensive and portable enough to be usable for making records of classroom behavior. Audiotape recordings are cheaper but much less adequate than videotape recordings. It turns out to be difficult to obtain audio records of teacher and pupil discourse of sufficient fidelity to make for comfortable and accurate listening. If the teacher wears a microphone on a string around her neck, one that is connected by wire or radio transmitter to the tape recorder, the teacher's speech can be recorded with high fidelity. But obtaining a record of what the students say requires at least one microphone in the middle of the room. Extraneous noises--the shuffling of feet, the banging of books, the mumbled asides--make the records of student talk only barely comprehensible. Many words are lost owing to incomprehensibility. Most users of such apparatus have found the results only barely satisfactory. In some instances, fairly elaborate provisions, such as carpeting and the use of several microphones, have been made under the supervision of qualified technicians. Under such conditions, audio recording has sometimes yielded satisfactory results. But most teachers will not have access to the equipment or technical skill needed to obtain such recordings.

The story is much the same when it comes to videotape recordings. But videotape cameras can have directional microphones that the camera operator aims at the speaker as he aims the camera at the speaker. The videotape recording equipment is also, of course, considerably more expensive, running into thousands rather than the hundreds of dollars that audiotape recorders cost. The cost of the camera operator's time adds to the expense of obtaining such information. Again, under present-day conditions, it seems unlikely that audio- and videotape recordings can be used as a routine matter in the millions of American classrooms.

One difficulty in the use of videotape recordings is that viewing one's self in this way is almost always at least mildly upsetting to the teacher, at least at first. And occasionally the experience is extremely disturbing. Viewers tend to focus on their physical appearance, and they see themselves as they have seldom seen themselves before, perhaps because they are accustomed to seeing themselves in a mirror. The unreversed view of themselves doubles every departure from perfect symmetry in their faces and bodies. In any case, most persons who see themselves for the first time on videotape may have never seen themselves in motion picture films or on videotape screens, and they see themselves as much less attractive than they had considered themselves to be.

Travers and Dillon (1975) have, accordingly questioned the value of giving teachers such "realistic" views of themselves. In their view, a somewhat unrealistic view of oneself may often lead to greater effort and more positive self evaluations, with correspondingly beneficial effects on one's motivation and relationships with others. But Fuller and Manning (1973) in reviewing the literature on the use of self-confrontation through videoplayback in teacher education, concluded that such feedback may make teachers more willing to receive suggestions, criticisms, and recommendations from others, such as supervisors and students. The increased receptivity may, however, result from the lowering of the teacher's self esteem--perhaps a not altogether healthy basis for improving the teacher's willingness to learn from others' suggestions. Travers and Dillon go on to offer some suggestions as to how the self-confrontation on a television screen can be made most beneficial:

1. Insure that the tape can be run more than once so that the teacher can become accustomed to his new image and become better able to pay attention to other aspects of what is being seen.
2. If it seems impossible to avoid overconcern with personal appearance and to focus on the way teaching is going on, "try shutting your eyes and listen to the sound" (p. 99). According to Travers and Dillon, some evidence indicates that the sound recording can be more informative than an audiovisual one.
3. Make adaptations to the ability of individuals to benefit from seeing themselves on videotape. This means, perhaps, using such self-confrontation more often with more confident, more mature, and better adjusted persons.

In short, the Travers-Dillon position relegates self-confrontation via videotape recordings to a secondary role in the diagnosis of training needs and gives greater emphasis to learning "to experience the classroom in an appropriate way...to find enjoyable aspects of children and classrooms" (p. 100).

One final difficulty in the use of such recordings should be mentioned. To be used to fullest advantage, in a way that capitalizes on their superiority as a permanent record over what can be obtained through live observation, the verbal part of the recording should be transcribed. Then it can be read and analyzed repeatedly and slowly enough to permit detailed, complex, and subtle distinctions. Such transcribing raises substantially the cost of the information. It takes at least two hours—and probably more--of a stenographer's time to transcribe one hour of classroom discourse. And the quality of the recording makes a great difference. Typically, stenographers find the task difficult and frustrating, because of the inaudibilities and confusions they find in audiotape recordings.

The videotape recordings have the advantage of permitting complex analyses and reanalyses of classroom nonverbal as well as verbal behavior. Research on teaching is increasingly employing such analyses. But its use in routine diagnosis of teachers' problems and difficulties seems altogether unrealistic. It simply costs too much.

One other approach suggests itself--one that has not yet, so far as we know, been used in recording what teachers and pupils say. This is a microphone enclosed in a mask worn by a recording technician. The technician repeats into the microphone what is being said in the room by whoever is speaking. The mask keeps the repetition from being heard by others. Such a mask has been used to record the proceedings of congressional committees and courts martial. It might be feasible for classroom recording, provided that teachers and students could quickly become accustomed to the strange appearance of the technician speaking into the mask being held by hand close to the mouth.

At any rate, once recordings are made by any of these methods, the process of formulating a diagnosis on the basis of this record must still be carried out. Here, again, we come to the problem of choosing dimensions or criteria. For the moment, we defer consideration of that problem. It will be considered in later sections.

Converting Data into Diagnosis: The Role of Values

Some methods of collecting diagnostic data yield not only data but also diagnoses. Others yield only data to which some kind of additional process of interpretation and evaluation must be applied in order to obtain a diagnosis. Let us now consider these processes of interpretation and evaluation.

The processes must be based upon values--conceptions of what is desirable, ideal, good, and so on. These ideas can in turn be derived either from assumptions that are, by definition, not to be questioned and not in need of support. Or they can be derived from evidence that some other phenomenon, process, or event is instrumental in achieving some value, goal, or desideratum. For many educators, an example of a value that needs no empirical support is pupil literacy, or ability to read, understand, speak, and write a language. So far as we know, no one questions this goal in any educational system. Literacy is indispensable for further education and participation in all societies that have written languages. Even in societies where literacy rates are low, only despots defend this state of affairs, and even they do not do so publicly. In developing and developed nations alike, a high rate of literacy is an unquestionable goal of the educational system.

By this value, other procedures, actions, and processes can in turn be justified. Those that contribute to literacy thus become themselves desirable. The teaching of reading and writing--and time spent on these tasks--thus become valued.

But the problem of values quickly becomes complex. More than one such unquestioned value exists. The process of attaining one value must compete for time and other resources with the process of attaining other values. Thus, along with literacy, social development is also regarded as desirable. Children need time to interact, playfully or otherwise, with other children. They need to learn how to get along with other people--younger people, peers, and older people, the same sex and the opposite sex, higher in authority and subordinates, and so on. Such social development also takes time, and that time often cannot be concurrent with time spent in learning to read. So educators must make value judgments as to how much time, of what kind, spent in what ways, should be devoted to these two unquestionably important ends. The teacher who makes her pupils spend all their "time on target" in learning to read would probably not be considered a good teacher. The same would be true of the teacher who occupies her pupils solely with learning how to get along with other people.

These observations bear upon the problem of making evaluations about how teachers perform. The ways in which teachers determine how pupils spend their time, what the pupils do during a given time, how the teacher gets them to do certain things, the effectiveness of the teacher's efforts to get pupils to spend their time in certain ways--all these begin to enter into the problem of evaluating the teacher's performance.

This logic leads to the need for the teacher's formulation of his or her purposes, values, goals, ends, or what have been called, "objectives." And teachers do make such choices. But they do not make them alone. The whole educational establishment influences these decisions. At the Federal level, the Office of Education and the National Institute of Education set priorities, such as the "Right to Read" program and the "Career Education" program. Committees of the Congress and the NIE's governing body, the National Council for Educational Research, make decisions concerning what is important in education. These decisions

affect the flow of billions of dollars for educational programs and for the research and development intended to improve these programs. Also, national organizations of teachers--the National Education Association and the American Federation of Teachers--and more specialized groups, such as the National Council of Teachers of English and the National Council for the Social Studies, operate so as to influence teachers' values and decisions.

At the state level, state departments of education, chief state school officers, and many departments, divisions, and advisory councils enter into the discourse concerning what is educationally important. Associations of teachers within each of the states, and various subject matter councils, operating with considerable independence of their national counterparts, issue statements, policy papers, studies, and resolutions concerning the values that should govern what is taught and how it should be taught.

At the local level, within each city and town, the school administration--the school board, the superintendent, the principal, and fellow teachers--significantly influence the individual teacher. Committees of teachers within a school district grapple with questions of values. Within each community, citizens groups, conservative and liberal, work to elect and appoint officials who will exert influence in the directions they desire.

In short, when the moment of decision is reached by an individual teacher in his or her own class, the issue has already been confronted by thousands of other persons, near and far, who have argued the alternatives both broadly and intensively. On no serious educational problem will the teacher find a lack of prior concern and pressure.

Nonetheless, as Kirst and Walker (1973) put it,

> Teachers have autonomy with regard to the mode of presentation of material within their own classroom. The teacher regulates her own schedule and methods of instruction. But studies dealing with curriculum innovation at the classroom level find "teachers seldom suggest distinctly new types of working patterns for themselves" (p. 503).

Thus, when it comes to decisions concerning values within any single classroom, the teacher has some say. Despite policies and decisions at the national, state, and local levels, the details of application are left to the teacher. Even when curriculum packages with specific instructions for teachers are required by local decision-makers, the way in which a teacher uses that curriculum package is almost altogether unsupervised and unmonitored (Corno, 1977). As one writer put it, the outside of the package may be the same for all teachers, but what teachers take out of that package is determined by the teacher.

Some Illustrative Values Concerning Teaching

Let us illustrate the kinds of value judgments concerning dimensions of teaching and the desirable points on those dimensions that a teacher must settle upon in order to arrive at a diagnosis of his or her needs and problems. We offer here a statement of some dimensions that we consider important. We base our choices on our interpretation of the findings of recent research on teacher's needs (e.g., National Education Association, 1972;Cruickshank, et al., 1976), on our informal knowledge of the teacher's problems and situation, and on our own values as citizens, parents, and persons. Our statement takes the form of a list of dimensions of teacher strategy, style, and skill. It will be more general than that which any individual teacher will use, because we shall not specify specific grade levels and subject matters. But, as we proceed, we shall turn on occasion to such specifics and put our statement in forms that apply to the teaching of a specific subject matter, or part of a subject matter, at a particular grade level.

This statement is intended as only an illustration of some of the evaluative dimensions that teachers might conceivably be concerned with. A complete list could run for many pages and fill volumes in itself. Here, in what might be an approximate order of importance, is that beginning.

1. Maintaining productive "order" in the classroom. This dimension refers to the degree to which the teacher is able to engage the pupils in what can be defended as appropriate and fruitful activity. At the undesirable extreme, this dimension refers to classrooms in which chaos

and disorder prevail. The pupils are active, but not in any way that seems related to the goals of education. At the other extreme, a variety of conditions may occur. Pupils can be working quietly by themselves on school tasks. They may be talking to, or working with, small groups of fellow students with or without the teacher, on a joint project. They may be in a single large group, listening to their teacher or watching a film or demonstration. Insofar as each pupil is engaged in what seems to be conducive to the achievement of the educational objectives of the day or the week, the teacher is succeeding in maintaining class order in a desirable way.

2. Arranging classroom organization appropriate to the objectives and the pupils. By organization, we refer to the degree to which the pupils are working individually, in small groups, or in a single large group. For some kinds of objectives and pupils, the best organization is pupils working alone, on materials appropriate for their level of attainment and learning style.

For other objectives and kinds of pupils, the best organization at any given moment would be a small group. The group may be engaged in a discussion, a role-playing session, a building project, the planning of a demonstration, or the preparation of a display.

For still other objectives and types of pupils, the most appropriate organization might be the traditional classroom recitation. Here the teacher provides some brief structuring of the lesson, asks questions ("solicits"), listens to students' responses, and then reacts to those students' responses. This kind of classroom organization is probably still the predominant one, and it still has an important place in teaching, for certain purposes and certain kinds of students. But it should probably not be as predominant as it has been.

For still other objectives, the organization should be a large group to which teachers at the upper elementary school and secondary school levels give short lectures, but not nearly to the extent that such teaching occurs at the college and university level. The unspoken consensus among educators is that, even if there is some justification for full-period formal lecturing in higher education, such teaching has

almost no proper role in elementary and secondary schools. But large-group teaching at the elementary school level can take the form of showing films and filmstrips, playing records, and laboratory demonstrations. In short, there are occasions in the elementary and secondary school when teaching students in a large group can be justified.

3. Establishing a desirable emotional tone in the classroom. Here we refer to the degree to which the classroom atmosphere is relaxed, pleasant, positively reinforcing, on the one hand, or tense and aversive, on the other. Here, the desirable point is often portrayed as the high point on an inverted U shaped curve. That is, achievement increases as motivation increases up to a certain point, but beyond that point achievement tends to deteriorate. A certain amount of tension is more conducive to achievement and performance than is complete relaxation.

This means that students should like their schooling--their teacher, their subject matter, their activities, their fellow students. But a business-like atmosphere should prevail. The kind of order that we described above should not be attained at the price of a prison-like atmosphere. If this point seems obvious, it can be defended on the grounds that many teachers even today use such an atmosphere to achieve order in the classroom.

The affect in the classroom also includes the level of excitement. Here again, the two extremes should be avoided, and the desirable level is usually the middle of the scale. A tomblike quiet may be appropriate at times for certain objectives, as when everyone is engaged in seatwork individually prescribed. A high excitement may be appropriate when the teacher is seeking the proper appreciation of a moment of suspense, a marvel of science, a poet's line, a crisis in history, or a mathematical insight.

4. Choosing the proper point between reception and discovery. By "reception," we mean pupils' reading or listening to straitforward telling by the teacher. The student simply receives, either aurally or visually, what he is to learn. By "discovery," we mean the pupils' use of inductive or deductive methods, more or less on his or her own, in arriving at solutions to problems. The points on this continuum vary as to how much help the teacher gives. At one extreme, the teacher tells,

or the students read or hear, everything to be learned. At the other extreme, the teacher tells, and the students read or hear, only the bare minimum needed to define a problem.

Where the students and teacher ought to operate along this continuum depends again on the nature of the educational objectives and the characteristics of the students. One thing that can be safely said is that teaching and learning ought to take place at a variety of points on this dimension. Teaching should be neither entirely aimed at reception nor entirely aimed at discovery learning. One extreme deprives students of the experience of figuring things out for themselves and seeing how logic and data can reveal what is new truth, at least to them. The other extreme is simply unworkable because there is too much for students to know and understand to require them to discover all of it by themselves. A proper introduction to what mankind has achieved over the centuries in mathematics, science, language, the social sciences, and the humanities cannot be acquired, at any level, solely by the discovery method. Unquestionably, skills in discovery, problem solving, research, investigation, hypothesis testing, estimation, and the like, are extremely valuable. But the acquisition of such skills cannot be allowed to replace completely the acquisition of knowledge and understanding of facts, definitions, concepts, principles, and techniques. Thus, teaching aimed at both reception and discovery learning should go on, and we should value the teacher's behaving in a way intermediate between exclusive use of either approach.

Acting on these values, we can convert data about a teacher's performance into a diagnosis of a teacher's needs or problems. The teacher has a problem if the data show that the teacher is

- unable to prevent disorder in the classroom,
- relying excessively on one kind of classroom organization, or kinds inappropriate to the objectives and the students,
- setting an emotional tone that is unpleasant, tense, hostile, or boring,
- too infrequently giving students a chance to find out things for themselves or presenting to them some of the myriads of important things they need to know and understand.

Chapter II. PRACTICE

After the trainee's needs have been diagnosed in one or more of the ways just discussed, the proper kind of practice is to be prescribed and carried out. In this chapter, we shall discuss the alternative kinds of practice, some of the dimensions along which they can be described, and some principles that may guide choices among these alternatives.

We enter here into a domain that has probably been actively cultivated more during the past decade than at any other period in the history of education. As was noted in a monograph of the Stanford Program on Teaching Effectiveness (1974), "teacher training products" have appeared in considerable abundance during the past decade or so. The Program's description of the state of the field of 1973 noted that 765 teacher training products had been identified. Of these, 657 were described with sufficient completeness to be entered into a flexible, computer-stored catalog developed by PTE. In that catalog, each product was described on a 117-item product description form. The monograph based on that catalog presented the frequency and distribution of product characteristics according to such major categories as: subject matter specificity, target audience, grade level specificity, target outcomes for teachers, target outcomes for students, product availability, the nature of the training situation (including whether materials must be supplied by the user), and the availability of field test results.

The choice among types of practice may be reduced, in the first instance, to a choice between a teacher training product and a natural practice situation. A teacher training product is a set of materials intended and designed to equip teachers with skills, or knowledge of how to do certain things, rather than merely knowledge that certain things are true.

> Accordingly, in our definition, teacher training products must require that the trainee be active, in the sense of performing, practicing, or trying out the skills to be acquired. Such a requirement rules out training materials that merely ask the trainee to receive information through reading, listening, or viewing. Thus, teacher training products require the trainee to go beyond receiving information to some kind of action based on the information (Program on Teaching Effectiveness, 1974, pp. 3-4).

In short, information about how the teacher behaves, when combined with some conception of what is desirable in teaching, allows us to determine how well a teacher is doing. The discrepancy between the desirable or the ideal (the value) and what is revealed by the kinds of data we have described (the actual) is the degree to which a teaching problem exists. Applying values to data yields a diagnosis.

We have stated these dimensions with the proviso that the desirable points on them should be defined according to the objectives and types of students. As noted in Chapter III of Part 1 the proviso concerning types of students refers to "aptitude-treatment interations" or the possibility that certain methods of teaching are better for students of one kind, while other methods are better for students at another point on some dimension of personality or aptitude.

If the practice does not entail use of a teacher training product, the alternative is to use a naturally occurring situation--typically a classroom. The latter was for many years the situation in which most practice for teacher trainees was conducted. That is, "student teaching" in regular classrooms was the well-nigh exclusive mechanism for practice, and no alternatives were available. It was in the 1960's that alternatives such as microteaching and simulated teaching with sound film became available. Since then, as already noted, the field of alternatives to natural teaching situations has proliferated.

Considerations in Choosing Practice Situations

What factors should guide the choice between a teacher training product of some kind and a natural teaching situation, namely, student teaching? The issue may be analyzed along several dimensions: control, focus, economy, and the realism that underlies them.

Control

Student teaching permits less control by the trainer and trainee of what goes on during the practice. The trainee is constrained to meet the demands that arise naturally in the classroom. These demands may or may not be appropriate to the trainee's needs for practice. The training may need practice in maintaining discipline, but the class may make little demand for the practice of discipline-maintaining skills. Or the trainee may need practice in expository teaching, but the class may be engaged in a discovery-learning exercise. Thus, the natural teaching situation is low in the degree of control of the kind of training that it provides.

Focus

Control has a corollary in the degree of focus it makes possible. The natural training situation permits relatively little focus. It calls upon the trainee to practice a whole range of teaching skills as the need for them arises rather than permit a focus on the particular skills in which practice is needed. Thus, in the natural situation, the trainee may obtain practice in conducting a role-playing session only once in a two-week period. This may not be often enough to allow the trainee to

acquire the skill as rapidly as he would if the training situation were more highly focused. In a more focused training set-up, the trainee might conceivably be able to practice the management of role-playing two or three times a day. The situation here resembles that in rehearsing a part in a play or a piece of music. The natural teaching situation is comparable to running through the whole play or piece of music at every rehearsal, while the focused situation permits the performer to practice a given scene or passage repeatedly without running through the whole play or sonata.

Control and focus are not independent. It is control of the training situation that makes focus possible. The natural training situation, such as student teaching, is low in control and focus. Most teacher training products are just the opposite; they make possible high levels of control and focus.

Economy

A third dimension of practice--economy--follows closely upon the first two. When control and focus are at a low level, each practice session is relatively expensive in the time and trouble of the persons involved. A whole class must be used, with its 30 or so pupils, its actual classroom space, its regular classroom time, and all its normal facilities. Teacher training products make it possible to engage in practice with fewer pupils, less space, shorter time periods, and fewer of the facilities regularly needed by actual classes. So the costs of using most teacher training products are typically much lower than those of using natural teaching situations.

It follows that, other things equal, teacher training products have considerable advantage over natural teaching situations. But, in the long run, other things are not equal. Eventually, there is no substitute for the natural teaching situation. Just as the actor must eventually take part in the whole play, and the violinist must perform the whole sonata, so the trainee must eventually take over an actual class in a natural teaching situation. In the past, however, he did so immediately with all of the already mentioned disadvantages of lower control, less focus, and less economy. Now, it is possible for the trainee to gain the

advantages of teacher training products before entering into, or practicing a given kind of teaching, in the natural teaching sitution.

Realism

Underlying the choice of methods, vehicles, or modes of practice is a general dimension of realism. Realism is the degree to which the practice situation embodies the stimulus and response situations and configurations that occur in the natural teaching situation. The stimulus situations consist of the students, their behaviors and characteristics; the physical setting, namely, the room, with its chairs, tables, pictures, and materials for teaching and learning; and the curriculum and schedule. The response situations consist of the students' responses to the stimuli provided by the teacher and fellow students, on the one hand, and the teacher's responses to the stimuli provided by the students, individually and collectively. The configurations consist of the time and space arrangements, the pace and rhythm of activity, and the interrelationship between two or more elements or components of the stimulus and response situations. As these stimulus and response situations and configurations depart more and more from those that occur in the natural teaching situation, the practice situation becomes less realistic. A sacrifice in realism may yield a gain in control, focus, and economy. It is for this reason that, in recent decades, practice teaching situations other than the regular classroom has been developed in the form of microteaching, minicourses, simulations, games, programmed instructional situations, protocol materials, training films, counseling arrangements, and the like.

The Possibility of Principles of Choice among Practice Situations

Given the variety of practice teaching situations just enumerated, the many objectives of practice that earlier diagnosis of trainees' needs may have revealed, is it possible to develop principles for matching needs with practice arrangements? What is envisaged here would take the form of a 2-way table. The columns would stand for types of practice situations ranging along a dimension of realism, with a natural classroom teaching situation at one end and, say, a pamphlet of reading matter at the other extreme. The rows would represent different types of training

need. One group of needs would bear upon preinteractive aspects of teaching, such as lesson planning, the formulation of objectives, the development of tests and examinations, the arrangement of field experiences, and other kinds of decision-making whereby the teacher chooses among alternative interactive teaching arrangements. A second category of trainee needs would refer to the needs for practice in face-to-face interaction with students, as in question-asking, reacting to students' responses, structuring (i.e., reviewing, stating objectives, summarizing, and the like).

Within the cells of this table could be entered the ratings of the appropriateness of the alternative practice situations to the various kinds of trainee need. It is at this point that research has only begun to provide answers. For this reason, the matching of practice situations to trainee needs must at present be based primarily on judgment, speculation, insight, or raw experience.

The Value of Discrimination Training

One example of the kind of research needed was provided by Wagner (1973). He compared the effectiveness of microteaching and cognitive discrimination training in bringing about student-centered teaching on the part of 78 undergraduate trainees, who were students in an introductory educational psychology course. The discrimination training consisted of presenting the students, four at a time, with 33 taped teacher replies to various student comments. The trainees had been supplied with a brief description of six sub-categories of teacher replies (asking for clarification, restating, and using student's ideas--all considered student-centered; and asking a directive question, arguing, and ignoring--all considered teacher-centered). The trainees coded the taped teacher responses one at a time and then, after each coding, were told the correct answer and given a short explanation. The training lasted about 30 minutes. In the microteaching group, each trainee taught a five-minute lesson to three college students, using the lesson he or she had prepared with material provided, and tried to be student-centered. Then the trainee viewed a videotape of this lesson, while the students rated his behavior. The trainee studied these ratings and the videotape, and

received reinforcement from the experimenter for any suggestions made by the trainee as to how student-centeredness could be increased. Then the trainee, after a brief additional preparation, taught his lesson again to ghe same students for another five minutes. The total microteaching session lasted about thirty minutes. Subsequently, all trainees spent another 15 minutes preparing another new lesson on a related topic, taught it for 10 minutes to three previously unknown college students, had their behavior rated by independent paid observers, uninformed as to which group each trainee belonged to or the hypothesis, during the following week.

The results showed that the discrimination-trained group was significantly more student-centered than either the microteaching or the control groups. The microteaching group was not significantly more student-centered than the control group. Thus, learning to discriminate between desired and undesired behavior was sufficient for behavioral change to occur. The more elaborate microteaching procedure did not, in this instance, cause significant overall changes in teaching behavior. The cognitive aspects of the training objectives apparently were more significant than the social-interactive or motor aspects. Cognitive-discrimination training was therefore more effective than a kind of training that called for overt verbal behavior in a social-interaction situation. This explanation of the reasons for the results is only conjectural. More experiments of this kind are necessary to make possible any confident assertions that one kind of training is more appropriate for a given kind of training need than is another kind of training.

The Value of Discrimination Interviews

A second example of research that bears on the matching of practice techniques and trainee needs was that provided by Good and Brophy (1974). They hypothesized that a single interview could be used to provide teachers with feedback based on observations of the teachers. They wanted to help teachers change their behavior toward selected students and also to determine effects on nontarget students.

The experimenters used data collected by other persons, the observers, on a large number of specific behaviors toward individual pupils. The

teacher's behavior was compared not with some abstract ideal but rather with her own behavior toward other pupils. Thus,

> in making suggestions for improvement, the authors were in effect saying "you are doing a fine job with Mary, now try to do the same kinds of things with Jane." This is much less threatening and more acceptable than "your way is wrong, do it my way" (p. 391).

In short, the treatment was intended to provide teachers merely with information to make them aware of what they were doing as a basis for making them able to change. Low-participation pupils and low-"extension" pupils (pupils needing the teacher's persistence in seeking a second or extended response) were identified in each of eight classrooms. The teacher was provided, in an individual interview, with the names of pupils in each of these two groups and also with the names of pupils in each of two contrast groups, whom the teachers were treating appropriately.

The teachers were, in large part, unaware of their differential treatment of these two groups of pupils. As a result of the interview, the teachers agreed to seek responses more persistently from the extension pupils and also, although less readily, to call on low participants more frequently and initiate more private interactions with them. Subsequent observations in each classroom showed that the teachers did move substantially toward the goals of the interviews: increasing the number of contacts with low participants and the percentage of times they continued to work with extension pupils after those pupils had responded inadequately.

Here again, we have an instance in which the teacher's cognitive awareness of a distinction, or a kind of behavioral discrimination on her part, was effective to a substantial degree in bringing about change in the teacher's behavior. Again, it appears that practice need not necessarily entail the actual performance of the motor or verbal behaviors at which the training is aimed. Nor is feedback of the kind traditionally provided by videotape or supervisory reports always necessary. In short, Brophy and Good, as well as Wagner, demonstrated that a kind of discrimination training--based in the one instance on brief descriptions of categories of teacher behavior and in the second instance on feedback about the trainee's own behavior--can be effective in changing teacher behavior.

Catalogs of Training Materials

If there is one point that can be definitively made at the outset of this section, it is that there is no shortage of teacher training materials. Indeed, in recent years, educators have been producing such materials at a fast and furious pace. The existence of these materials, however, does not guarantee their use, and the obvious problem confronting teachers is where to discover what types of materials are available. It seemed inevitable, therefore, that numerous catalogs would appear with lists of available materials.

The purpose of this section is to describe briefly some teacher training materials compendia that have been assembled in recent years. As this section will show, the range of topics covered in a typical catalog is extremely broad. This is not surprising, because the tremendous information explosion of the last few decades has vastly expanded our knowledge beyond any one person's ability to comprehend more than a small fraction of it. Further, the variety of experience available to more and more people within our society has resulted in a greater diversity of lifestyles and value systems. Therefore, expectations as to the purposes of schools and the responsibilities of teachers have become more varied between communities, within them, and also between teachers. What one community or teacher may consider exceptionally important, another may value very little. For these reasons, it is imperative that training products which address the variety of expectations and values of educational systems be available.

Another factor making for the recent expansion in the supply of teacher training products has been the emphasis on their development by the Federal government's Office of Education and National Institute of Education. That emphasis influenced university research and development centers, regional educational laboratories, and many other workers and organizations to produce curriculum packages and materials to help teachers and administrators. This enterprise was an attempt to make readily available and highly usable the ideas and techniques that educational research and development workers had formulated and that had usually, in the past, gone unused and neglected by the practitioners to whom they could conceivably be helpful.

The Stanford Catalog

To meet its research needs, the Program on Teaching Effectiveness (1974) of the Stanford Center for Research and Development in Teaching compiled in 1973 a master catalog stored on computer tape. This catalog identified and described more than 800 products. A teacher training product was defined as material intended to equip teachers with skills, or knowledge of how to do certain things, rather than merely knowledge that certain things are true. These products required the trainee to be active in the sense of performing, practicing, or trying out the skills to be acquired. Materials that required the individual merely to read, listen, or view, were ruled out.

The catalog described each product on several dimensions:

a. Subject matter specificity (Did it apply to the teaching of English, mathematics, science, social studies, or school subjects in general?)

b. Target audience (Was the product intended for preservice trainees, inservice teachers, or both?)

c. Grade-level specificity (Was the teaching skill pertinent to early childhood education, to high school, to something in between, or to all levels?)

d. Target outcomes for teachers (Which aspects of teaching--such as planning, presentation, interaction with pupils, attitude toward teaching, or teacher's self-concept--was the product concerned with?)

e. Target outcomes for students (Which of various kinds of cognitive and social-emotional outcomes?)

f. Training situation (What materials were provided with the product, and what materials and equipment had to be provided by the user?)

g. Time and persons required to administer training with the product (How many trainees could use the product at a time?)

h. Kind of practice provided Were they paper-and-pencil exercises, classifying incidents in a film, playing a simulated teaching game, or teaching actual students?)

i. Phase of teaching in which the skills acquired would be used (Did the training apply to the teacher's work before, during, or after interaction with students?)

The NEA/Far West Laboratory Project

Because the main purpose of the Stanford catalog was to determine in detail what was available so as to obtain a basis for planning the work of the Stanford Center's Program on Teaching Effectiveness, the catalog was not readily usable by teachers or teacher educators. The need for having information in a more usable form led to a joint project of the NEA and the Far West Laboratory for Educational Research and Development (McClure, 1976). The project saw to it that many products were examined by teachers, teacher educators, and other potential users. McClure characterized the products as ranging from simple to complex; as usable in either individual or large-group instruction; as ranging from cheap to expensive; as using either a single medium or several media; as ranging from homemade to "slickly professional"; as subject-centered or process-oriented or both; as oriented toward all levels from early childhood education to college and adult education; as ranging from those that offered undocumented, simply derived claims for effectiveness to those that had been subjected to rigorous field tests; and as varying between empirically and theoretically based.

From working with practicioners, McClure and his coworkers discovered that most teachers were unaware of the existence of the products. Furthermore, it seemed that the most successful products clearly matched teachers' stated needs in such activities as individualizing instruction, managing classrooms, or teaching reading. They were also those which could be used without an outside resource person, could be completed over a period of several weeks, employed methods other than merely presenting reading matter, and were attractively but not expensively packaged. Some persons who knew about the products rejected them on the grounds that they imposed others' views of teaching or were unrelated to a local problem, but others reacted with support, feeling the project to be a resource that could help with inservice teacher education. The project also confirmed what the Stanford project had found earlier, namely, that most products had not been tested or evaluated.

An illustrative product is "Individually Guided Motivation," developed at the Wisconsin Research and Development Center for Cognitive

Learning. It deals with four motivational procedures for use with elementary school children: adult-child conferences to encourage independent reading, teacher-child conferences for goal setting, older children tutoring younger children, and small-group conferences to encourage self-directed desirable social behavior. This product, consisting of a textbook to be studied and five films to be viewed and discussed by teachers, requires five two-hour sessions or a two-day workshop. Large-group sessions are used to communicate information, show films, and administer self-assessment exercises. Large- or small-group sessions are used to criticize and apply information, discuss practice exercises, and engage in role playing.

With the goal of making teacher training products better known and more extensively tried, the NEA group has organized a "Project on Utilization of Inservice Education R & D Outcomes." The project serves teachers and other local users in approximately 80 local education associations and school districts in 16 states. It is intended to assist teachers in identifying problems in teaching basic skills, to build an information system on training products aimed at improving teaching in the basic skills, to assist in setting criteria for selecting products, and to provide help in adapting the products to local conditions. Descriptions of products are kept in central files at the NEA, and an information specialist is available via a toll-free telephone to help users track down the products that seem most promising.

The Teacher Education Developmental Service

An extensive catalog of competency-based teacher education products has recently been released by the Teacher Education Developmental Service (1975). The TEDS established a research library in 1973 as a centralized source of multi-media materials on competency-based teacher education for consortia in New York State. The research library includes training modules from more than 60 sources in the United States and general works pertaining to competency-based teacher education. In the catalog, the modules are grouped according to their place or origin. TEDS itself does not loan, duplicate, or sell the holdings that are in the library or listed in the catalog. But the catalog contains the addresses of the module developers and publishers, and the research staff will assist persons wishing to obtain copies of the materials.

Resources for Performance-Based Education

Houston, et al. (undated), have recently released a catalog listing teacher training products for performance-based education. This project was supported by a grant from the Division of Teacher Education and Certification of the New York State Education Department. The project was intended to provide a useful source of data for programs currently experimenting with competency-based education. The project was jointly worked on by the Multi-State Consortium on Performance-Based Teacher Education--a group of workers and agencies dedicated to improving teacher preparation programs and certification standards. The Consortium publishes newsletters, papers, and monographs, and sponsors conferences on the subject. Resources annotated in the catalog include films, slide and tape modules, programmed texts, and multi-media kits for training prospective or inservice educators. Not included are textbooks, materials produced prior to 1967, resources for children, materials whose primary purpose is to teach content unless they are in modular format, descriptions of programs, and lists of objectives or competencies.

The Emporia Teacher Corps Collections

Several collections have been assembled by the Teacher Corps at Emporia, Kansas. Two recent catalogs will be described here. The "Bambi Collection" (Williams, 1972) was developed for the Seventh Cycle National Role Group Conference in Washington, D.C., in May 1972, and was designed as a part of the interior information system of National Teacher Corps as a service to Teacher Corps Projects. The materials listed in the catalog are available at Kansas State Teachers College for use by educators. Materials in the catalog are grouped according to their various purposes--training teachers, teaching children, teacher certification, educational management, performance-based assessment, educating children with learning and behavioral problems in the regular classroom, community-based education, team teaching, differentiated staffing, team leaders, correctional education, education for native Americans, teacher competencies, and ethnic studies.

A second catalog is the "Emporia Collection" (Williams, Stremel, & Quirk, 1974). These materials were gathered for the resource center at

the 8th and 9th Cycle National Teacher Corps Conference in Washington, D.C., in June 1974. These references are housed in the Teacher Corps Resource Center at Emporia Kansas State College and are available for general use. The materials in the catalog have been classified under four broad headings: special education, elementary education, middle and secondary education, and other.

NIE Education Products

The National Institute of Education (1975) has assembled a catalog of NIE-sponsored education projects. These deal with a variety of topics, such as minicourses, protocol materials, interaction analysis, physical environments, and computer-assisted instruction. For each product, the information given includes an abstract and deals with the subject areas covered, intended users and beneficiaries, goals or purposes, patterns of use, assessment provisions, time requirements, implementation procedures, summary cost information, personnel required for product adoption and use, assurances and claims, materials and equipment, developer or author, and availability. In addition, the catalog contains an index of authors and their products, a media index, and a school-subject index.

The American Institutes for Research Product Catalog

The American Institutes for Research in the Behavioral Sciences issued a product catalog (Crawford, Kratochvil, & Wright, 1972) in the course of a project whose overall goal was to uncover factors associated with the impact of educational products. The specific objectives of the project were (a) to make systematic case studies of the development of selected educational products as an initial basis for arriving at more precise procedures for assessing their potential impact; (b) to provide empirical case study data related to current hypotheses about innovation and change in public school education; and (c) to list educational products judged, according to specific criteria, to have substantial positive impact. After development of the initial selection criteria, 117 products that met these criteria were chosen. Then 21 of these products were intensively reviewed; the history of each from its origin through its diffusion and adoption was traced. A brief narrative description of all 117 products is given in an appendix of the catalog.

The Catalog Situation

In short, as the foregoing descriptions indicate, the person interested in teacher training products can turn to several catalogs in which useful information can be found. The catalogs reflect the vigor and resources that have been invested in the training product approach to the improvement of teacher education. And the NEA Project on Utilization of Inservice Education R & D Outcomes has made it possible to obtain information on training products by phone. Continuation of this kind of effort should remove ignorance or lack of information about teacher training products as an obstacle to the use of them.

Protocols for Improving Teacher Understanding of Concepts

Protocol materials were originally conceived to be a documentary record, such as an audiotape, videotape, or film, of the actual behavior of teachers and pupils in classroom and other school settings (Gliessman, 1972). This documentary material was to serve as raw material for practice in interpreting behavior using concepts basic to teacher education, for example, psychological, social, and pedagogical concepts. Such practice in interpretation would presumably result in a teacher's acquiring a more complete understanding of these concepts, since they would have been related to their referents in behavior, and an increase in the teacher's ability to use the concepts in interpreting classroom and other educational phenomena. In a sense, then, protocol materials were designed to be a means of bringing together concept and behavior.

The developer of such protocol materials is faced with several problems. For one, the concepts demonstrated must have some generality and utility. The situations in which they are depicted must be reasonably unambiguous so that essential components of the concept are clearly specified. Hence, the developer's task is not always easy. One researcher (Kounin, 1970) has described a desirable teacher attribute called "withitness," or "having eyes in the back of the head." It takes little imagination to realize the difficulty of properly displaying this concept on film or videotape.

Another problem concerns instructional design, or deciding on a format with reference to the behaviors to be depicted. Since important

behaviors do not always naturally occur in actual classroom situations, other means of insuring the availability of the behavior have been used, such as staging or careful editing. Finally, the developer must produce materials that meet high technical standards. Developers have learned that users do not overlook technical inadequacy and lack of authenticity for the sake of having conceptually sound materials.

According to a review of the limited evidence by Kleucker (1974), the use of protocol materials does lead to the acquisition of educationally relevant concepts. Barnes (1972) found that filmed protocol instruction led to greater concept acquisition and transfer than expository instruction. Similarly, Johnson (1968) and Koran, Snow, and McDonald (1971) found that instruction based on protocol or protocol-like materials led to the acquisition of educationally relevant concepts. In other studies (Borg, Kellenbach, Morris, & Friebel, 1969; Langer, & Allen, 1970; Wallen, & Utsey, 1969), subjects were required to analyze protocol-like films or videotapes, although these studies were primarily based on the use of training materials. While it was found that the use of such materials led to the acquisition of specific teaching skills, it is unclear to what extent the protocol-like components influenced the outcomes of the studies.

The Indiana University Film Series

The National Center for the Development of Training Materials in Teacher Education at Indiana University has developed a protocol film series on "Concepts and Patterns in Teacher-Pupil Interaction" (1976). The series is intended to help teachers use descriptive and interpretive concepts that refer to significant teacher behaviors in classroom interaction. The ten films in the series provide a comprehensive set of instructional materials. Nine of the films are designed to provide the instructor with sufficient material, to help his students understand a basic set of concepts dealing with teacher interactive behavior and to give his students practice in interpreting classroom behavior in terms of these concepts. A tenth film provides a means of objectively evaluating performance in using the concepts interpretively. The specific concepts that the films deal with are the teacher's use of approving and disapproving as influencing techniques, probing and informing as discussion skills,

and questions that call for reproductive and productive responses. Empirical evidence indicated that systematic use of the films in the series led to significant gains in concept acquisition as measured with a filmed test (Gliessman, & Pugh, 1976).

The Far West Laboratory-Stanford Center Project

The Far West Laboratory for Educational Research and Development and the Stanford Center for Research and Development in Teaching collaborated in developing sets of protocol films and training manuals for teachers (Far West Laboratory for Educational Research and Development, 1971). Each set is devoted to a different topic, such as using student ideas, praise and corrective feedback, and variety and variation. The manuals are divided into five sections. The first section contains a discussion and examples of the principle or concepts in operation. This material is based on research evidence where possible but also includes extrapolations from that evidence in order to generalize to situations for which no data exist. In the second section, a review of research concerned with the protocol concept is presented. The third section provides a script of the protocol materials, with annotation describing what is happening and its relation to the concept. The fourth section contains a report on the field testing of the materials. The fifth section discusses inappropriate or idiosyncratic uses of the concept.

The University of Colorado Project

The University of Colorado project dealt with instructional concepts (Center for Education in the Social Sciences, 1973). It was held that preservice teachers needed to study specific concepts and their behavioral indicators within a conceptual framework that made sense of the instructional process. In all, five units of protocol materials for teacher education were developed. The topics of these units are (1) conceptualizing the process of instruction; (2) learners and their characteristics: implications for instructional decision-making; (3) verbal interaction in the cognitive dimension: the relationship between teacher verbal behavior and student response; (4) organizing facts to teach meaningful relationships; and (5) fair verbal behavior. Appropriate booklets and film materials have been produced for each unit, and the units have been field tested in various locations. Materials are available directly from the Center.

The Utah State University Protocol Project

Some of the most extensive work on protocol materials has been carried out by the Utah State University Protocol Project (Borg, & Stowitschek, 1972; Utah Protocol Materials Project, 1973). One set of materials deals with six concepts that are useful in understanding teacher language: extension, encouragement, clarity, emphasis, feedback, and organization. For each concept, the material identifies specific teacher strategies and behavioral indicators that relate the concept to classroom application. The modules are individualized and can be completed by teachers entirely during out-of-class time. Or they can be used in conjunction with supplementary materials for in-class discussions or activity groups. A prototype for each module was developed and then tested on one college class in order to collect summative and formative evaluation data. After the data were analyzed, the modules were revised and again tested in college classes. The criterion for success was that 80 percent of the field test participants would attain at least 80 percent mastery on the measures included as part of each module. The results of the final field test indicated that this criterion level was achieveed.

Another part of the project produced modules on four concepts relating to classroom management: group alerting, learner accountability, transitions, and withitness. These concepts were, for the most part, drawn from the work of Kounin (1970). Although these materials are, like those above, designed for individualized work, they are easily incorporated into traditionally-organized teacher training courses. They are suitable for use in a variety of activities, such as discussions, microteaching, and role playing. A detailed instructors manual accompanies the training package.

Other Material

The subject of protocol materials received considerable attention in the Winter 1974 issue of the Journal of Teacher Education (Volume 25, Number 4). In one thoughtful article, Burdin (1974) traced the history of the protocol movement, and raised a number of issues facing the developers of protocol materials. In short, questions of feasibility are now more important than than those relating to desirability. Burdin concluded that "Validated development and utilization of protocol materials could

be an encouraging demonstration of how the education profession, in creative partnership with governement and education institutions, can create a more professionalized body of educators" (p. 299).

Two excellent catalogs related to protocol materials have been developed by Turner (1973) and Hudgins (1974). The catalog edited by Turner lists teaching skills and is designed to help determine which skills require special materials and which can be acquired through a simpler process. The seven special chapters of teaching skills deal with early childhood, socialization and classroom management, language arts in the elementary school, English, social studies, mathematics, and science. Each chapter, by a specialist on the subject, deals with the content, teaching approaches, functions of teachers, skills within the functions, and the indicators of the skills in either the classroom or the laboratory context.

The catalog by Hudgins goes a step farther than listing skills. Its purpose is to provide developers of protocol materials with a conceptual resource. Since, as Hudgins believes, the problems of the format of protocol materials are steadily being resolved, the catalog is intended to help resolve the problem of content of the materials. In dealing with what concepts are involved and how they might be illustrated, Hudgins provided definitions, indicators, and illustrations of the concepts.

In another useful review article, Cooper (1975) summarized evidence on the effectiveness of protocol materials in the improvement of teaching. He attempted to place this evaluation in the context of a brief review of protocol materials as an educational innovation. A listing of resource development centers is also provided. Especially useful in Cooper's continuum of types of protocol evaluation evidence and materials. It ranges as follows:

1. Volume of requests and extent of use
2. Reactions of teachers of trainees
3. Reactions of trainees
4. Learning by trainees other than performance
5. Changed on-the-job performance of trainees
6. Changed behavior of children (i.e., of pupils of the trainees)

Cooper noted that the last type (No. 6) in this list would constitute "the most powerful evidence of the effectiveness of protocol materials" and that "to date no project has tried to gather this kind of evidence" (p. 71). Cooper concluded by stressing the need for further evaluation of protocol materials as to their effectiveness in promoting teacher concept attainment. He held that the time is right for investigating whether protocol materials make any difference with respect to pupil performance as compared to other teacher training methods.

Training Methods and Materials

Recent years have seen a rapid expansion in types of training methods for teachers, in addition to the growth of materials discussed earlier. This expansion has transformed the state of the art from that of a decade or two ago, when student teaching was considered the primary means of training prospective teachers, and in-service teacher training was virtually nonexistent. Part of the expansion in training methods is attributable to the growth of social science knowledge, but some is due to reaction against student teaching. Student teaching has often been indicted as insufficiently systematic, unplanned, unmanageable in its complexity, and too much at the mercy of the idiosyncrasies of the cooperating and supervising teachers. Furthermore, some appraisals have shown that student teachers have hardly changed in their ways of teaching from the beginning to the end of the student teaching period. And some evidence has even indicated that the student teachers' attitudes and behavior have deteriorated, at least in the views of those who value nonauthoritarianism and nonpunitiveness in teaching. In what follows, some alternatives to student teaching are discussed, and the diversity in the field should be clearly evident.

Training Methods in General

This section presents a brief overview of some of the recent research on newer training methods. Perhaps the most influential work has developed and investigated the effectiveness of observational methods, videotapes and films, and microteaching and minicourses. For this reason, discussions pertaining to these methods will be given in later sections. Here some other methods will be briefly reviewed so that the reader can grasp the flavor of the other techniques employed.

Simulation Methods. According to Hughes and Traill (1975), simulation involves a learner in active participation in a situation modeled on a real-life problem. The problem is normally one that involves the learner in a decision-making situation and encourages the learner to think and act upon the particular strategy to be selected to solve the problem. One major advantage of simulation methods is that participants can engage in thinking about discrete problems without the danger and threats normally surrounding them in the real classroom. The concept of simulated activities has developed to include such activities as role playing, microteaching, in-basket studies, case studies, games, and simulated classroom environments.

One of the newer advances in the field concerns computer-based simulations. According to Lunetta (1977), one primary advantage of such simulations is that users can explore alternative pathways to particular incidents without fear of the results. Computer programs can be written to cover various decisions, and information can be given to users in discrete chunks, so as to encourage a maximum amount of thinking. Furthermore, users can take as much or as little time as they desire, since they are not interacting with others persons. Data collected from both preservice and inservice teachers have indicated that the simulations have been a valuable and nonthreatening medium for growth and for the development of teaching competencies. Attitudinal data especially have been positive.

An example of an interactive computer simulation for teacher education was written by Flake (1973). The program focused on teaching strategies and questioning behaviors. Preservice students of mathematics teaching methods were the participants. The participant "taught" a simulated class via an interactive computer terminal. He would "ask" a question of the class, get a response from one of the simulated students, "ask" another question, get a response, and so forth. Through his questions he was to "teach" the simulated students a principle. The results showed that participants grasped the strategies and the ways to follow up on student responses.

Self-Contained Training Materials. Hudgins (1974) argued that skill in teaching anything should be based upon an empirically grounded model of that teaching skill. For example, the model might be one for the "teaching of concepts." This model must be taught and learned as a kind of cognitive phase of skill development. The second phase should involve the self-contained training materials. Materials in this phase should provide opportunity for extended practice with feedback in a way that does not involve all the complexities of the actual field context. Instead, the practice should require a minimum of external support in the sense of equipment and personnel. It should be efficient in providing practice and feedback conditions rather than be realistic.

Directions to the teacher trainee should provide an outline of the elements of the training task and an advance statement of the classes of responses that will be reinforced. The process of training the prospective teacher in the skill of teaching concepts might begin with a direction to him as follows:

> You are going to teach the concepts of "latitude and longitude" to a group of 9 and 10 year olds who may be presumed to be of average intellectual and educational development. Go home and prepare your lesson. Return to this training material twenty-four hours from now (p. 29).

Some additional guidelines are provided to help the teacher. According to Hudgins, one chief benefit of self-contained training materials is their provision for permitting and encouraging trainees to continue practicing a skill until they have met a criterion. The criterion or standard for mastery should be presented to the trainee prior to actual practice and should be sufficiently clear to enable the trainee to be as good a judge as anyone of when his performance conforms to this standard.

Teacher Interpersonal Competencies. A central problem in the education of teachers is that of producing interpersonal competency in the classroom. Yet few investigations have focused on comparing methods for providing teachers with the requisite human relations skills. This lack of effort is surprising in view of the continued interest in human relations as a facet of American education.

The literature on group dynamics and the teacher-student relationship was thoroughly reviewed by Crist (1972). Her general conclusion on the basis of the relatively nonrigorous studies was that such training was usually followed by highly favorable testimony by participants concerning effectiveness. But evidence based on the evaluation of behavior, especially behavior in real-life settings, especially classrooms, was altogether unavailable.

More recently, Kirby and Bowers (1975) reported an investigation in which two forms of human relations training were presented to teachers: sensitivity training (the T-group) and a "human potential seminar." The The latter consisted of a program of educational exericises which the leader modeled and the participants then performed. The exercises dealt with goal setting, personal "unfoldment," peak experience recall, successful and satisfying experiences, value clarification, and strength acknowledgement. The results demonstrated that with elementary school teachers in an innovative setting, the T-group followed by the human potential seminar was more effective than either one alone or neither in promoting the development of human relations principles, as measured with an observation instrument, OSCaR 5V, used to record teacher behavior relating to practice of the principles in the classroom.

Galloway, Thornton, and Evans (1976) reported an investigation in which it was hypothesized that improvement in student attitudes toward school, self-concept, and attitudes toward classroom climate are related to teacher training in human relations skills. Two methods of training were employed: The Teacher-Advisor training program, and the Teacher Advisor Training program, and the Teacher Effectiveness Training program. Effectiveness Training program. The former was designed to develop "process skills" focused on active learning, interpersonal relations, and personal growth through facilitative intervention. It used small, structured groups of students that "process specific goals with the teacher acting as facilitator, monitor, and as provider of resources" (p. 2). The Teacher Effectiveness Training was aimed primarily at the teacher's "primary function" of instruction and was intended to "develop skills, problem-solving abilities, and conflict resolution procedures" (p. 2). From the results, the researchers concluded that these two kinds

of training had promise for the enhancement of teacher self-concept and subsequent student self-concept. Further, although not statistically significant, the results showed that students of teachers who received training had higher grade point averages and fewer absences.

Teacher Attitude Training. Gies, Denton, Messner, and Leonard (1975) hypothesized that there would be significant differences in the knowledge of and attitudes toward selected teaching practices on the part of university teachers as a result of an inservice training program. The training program was organized to provide for meetings in 10 successive half-day sessions for 30 hours of concentrated instruction and interaction. The program was divided into six instructional modules dealing with verbal interactive behavior, microteaching and microanalysis, measurable objectives, measurement and evaluation, instructional media, and the overall program. The program's central theme was that self-assessment for the purpose of improving instruction was possible. After the training, participants showed significantly greater knowledge and more positive attitudes in relation to each of the instructional modules; even for university teachers, improving attitude towards certain instructional practices is possible.

Training Teacher Creativity. One skill demanded of the creative elementary school teacher is that of developing unique ideas for child activities. Poole (1975) investigated the efficacy of various forms of training in promoting such teacher creativity. Three experimental groups were compared against a no-training control group. One group prepared lists of activity ideas on set themes. A second group also did this but with the aid of written suggestions. The third group prepared the lists with the help of written suggestions and group discussion. The lists generated were rated according to pre-established criteria. The trained groups performed significantly better than the nontrained group, but the superiority of the third (discussion) group over the others was not confirmed. Other evidence, however, provided grounds for preferring the discussion method of training. Poole concluded that specific-component skill training should be included in teacher training programs in addition to the more general methods courses usually taught.

Reducing Teachers' Negative Self-Thoughts. Hannum, Thoresen, and Hubbard (1974) worked with two excessively self-critical teachers to increase their positive self-thoughts and decrease negative ones. An intensive experimental design involving four phases was employed. Each phase-baseline, thought stopping, positive intervention, and follow-up--lasted about two weeks. During all phases, the teachers observed their positive and negative self-thoughts with the aid of wrist counters. Classroom observers coded instances of overt positive and negative self-thoughts. A positive intervention, which used stimulus cues to prompt positive self-thoughts, was effective in increasing the positive thoughts of one teacher. The reported changes in self-thoughts were supported by two self-report measures and also, to some extent, by the external observations. Thus, some support for the behavioral effects of self-observation was demonstrated.

Improving Teachers' Ability to Listen. Lundgren (1972) hypothesized that teachers' skills in listening could be improved by special training, and assessed the effects of such training in classroom teacher-learner interactions. Of 54 Stanford teacher trainees representing a variety of subject backgrounds, half received the Xerox Corporation's "Effective Listening" training program and listening pre- and posttests. The other half received only the tests. After training and testing, all subjects were videotaped while conducting classroom discussions. They were given no information to indicate that the videotapes were related to the listening training program. Despite no differences on the pretest, the experimental group performed significantly better on the listening posttest. No significant differences between groups were found in the classroom situations with respect to reactions to student input. But the teachers who performed better in the listening posttest also made better use of student input during the class discussions. Other teacher aptitude variables did not serve to predict teachers' listening-related performance in classroom discussions.

Increasing Teacher Use of Higher-Order Questions. Claus (1969) sought to train teachers to increase their use of higher-order questions, that is, questions that elicit complex forms of thinking rather than simply

the reiteration of factual information. The effects of cueing procedures in modeling and in feedback via videotapes were investigated to determine whether providing cues on the questioning behavior would increase the subsequent frequency and range of the teacher's use of higher-order questions. A presentation-practice-feedback instructional procedure was used within a microteaching format. All trainees viewed videotaped model teachers displaying the criterion behavior, practiced matching the model behaviors in a videotaped microteaching session, and then viewed the playback of their own performance. Depending on their group assignment, trainees received cues in both the training and the feedback conditions, cues in neither condition, or cues in one of the conditions. Results showed the most effective treatment to be modeling, with cued model groups ranking higher than noncued model groups. The feedback treatment, with or without cues, produced no significant effect. It was concluded that, in the acquisition of a complex teaching skill, observational learning with cueing is more effective than feedback, with or without cueing, in producing desired behavior change.

Effects of Student Ratings. A last category of studies deals with changing teacher behavior through the use of pupil ratings. The pupils' ratings of their teachers' behavior provided to teachers who, presumably, would attempt to change their behavior in areas requiring correction. Such ratings have several advantages over other training methods. The technique requires no interviews or observations by professional staff whose salaries must be paid. The technique is also useable easily and rapidly, and feedback can be virtually instantaneous. Such feedback has been used, with some significant effects, with sixth-grade teachers given their pupils' ratings (Gage, Runkel, & Chatterjee, 1963); with elementary school principals given their teachers' ratings (Daw, & Gage, 1967; Burns, 1977); and with social studies department chairmen given the department members' ratings (Hovenier, 1966).

Nonetheless, there appear to be certain limitations. For example, Centra (1973) found that the feedback of college students' ratings to teachers produced changes in the teachers' behavior, but only when there were marked discrepancies between the teacher's self-rating and the pupils'

ratings. Also, pupils must be mature enough to make usable and reliable ratings, and according to Gage (1977), the fifth or sixth grade is probably the lower limit. Another limitation, as McKeachie (1976) pointed out, is that teachers are more likely to change if they receive initial ratings that are moderate rather than extremely high or low. Finally, it should be expected that change is possible only if the teacher has the necessary ability to change within his or her repertoire of behaviors, that is, when the teacher has the ability to change in the desired direction. Without this ability, it seems probable that some amount of training would be necessary.

Observation Methods

The term "observational system" refers here to any systematic technique for identifying, classifying, and quantifying specific teaching activities. The key element here is "systematic," since in a sense, all teacher training involves observation on someone's part. For an excellent review of observation research, the reader is directed to Rosenshine and Furst (1973).

While systematic observational systems date back farther, the real boom in their development began during the 1960s. Of the systems developed, the Flanders Interaction Analysis System or FIAC (Flanders, 1970) is the best known. Basically, this tool consists of categorizing verbal behaviors of teachers and students under a number of headings, and then searching for patterns that might reveal characteristics of effective teaching.

The Flanders system requires the use of trained observers; thus, it can be loosely classified as an "other-observation" system. In recent years, there has been a similar development of self-observation systems. Through the use of counters or journal entries, teachers have begun to keep track of the frequency and timing of their own behaviors. Such self-observation, used along with intervention methods, now constitutes a growing aspect of teacher training.

In what follows, the use of other- and self-observation instruments is discussed. To date, the greater amount of research has been conducted with other-observation instruments. Some representative studies from this tradition are summarized first. Despite the fact that there is no

consensus among educators as to whether the results of observation systems justify their use, the approach has received sufficient attention to form an important part of teacher training today.

Other-observation research

Using a modified version of the Flanders system, Bondi and Ober (1969) investigated the effects of interaction analysis feedback on the verbal behavior of student teachers. After receiving training in the Flanders system, the student teachers were observed over a number of teaching sessions. Teachers in the experimental group received summary feedback based on the system after each observation session, while control teachers did not receive feedback. Experimental teachers were also able to compare their present performances with their past performances. The results indicated that, as compared with control teachers, experimental teachers used more praise, accepted and clarified pupil ideas more, used more indirect talk, used more extended praise, displayed more extended use of pupil ideas, used more positive affective talk, criticized less, and gave fewer directions. Thus, the feedback from the system was the key variable in changing the teachers' subsequent behavior.

Subsequent research indicates that training in the mechanics of interaction analysis prior to actual observation may be unnecessary. Kline and Sorge (1974), working with college instructors, also used an experimental and a control group as above, but neither group received prior training. Observational feedback was provided after each session to the experimental-group teachers. As compared with the control-group teachers, the experimental group showed significantly greater changes in subsequent behavior.

The Flanders system requires recording behavioral interactions every three seconds. As such, it measures small units of behavior. Campbell (1975) argues that this and similar systems have several limitations. The main problem involves the difficulty in observing the fast-moving teaching process in terms of microunits. Not only are these difficult to observe, but they are unrealistic inasmuch as actual classroom teaching occurs in much longer sequences. Further, microunits make poor feedback, since teachers tend not to think in these terms but rather in terms

of broader categories. For these reasons, Campbell recommended combining microunits into larger blocks called macrounits and analyzing these interaction patterns. It should be easier to show a teacher his top ten patterns than to attempt to show him his 25 most frequent micropatterns.

While Campbell argues for employing more molar units as observational data, Allon (1969) contends that the Flanders system is based on categories which are too broad. Because the various behaviors are grouped according to function in the system, such as student talk and teacher talk, functionally similar behaviors are grouped (irrespective of content) under a single heading. Owing to this practice, the Flanders system prevents the use of highly informative response rates as the basic dependent measures. For example, the pupil involved is unknown, the subject matter is unspecified, and the correctness of the response is disregarded. Allon holds that what is needed is to measure much more specific behaviors over time with other conditions held constant. Eventually, as a result of isolating those conditions which reflect changes in rate for a particular behavior, one can learn under what conditions the behavior occurs and also gain behavioral control through manipulation of those conditions.

While the controversy over the unit of analysis for classroom observation continues, the fact remains that teachers usually make some successful attempt to change their behavior to make it accord more closely with their own previously unarticulated conceptions of desirable teaching (Flanders, 1970). Studies using other types of observational systems, many not as well documented as the Flanders system, also frequently show corresponding changes in teacher behavior as a result of feedback.

One such study was that by Morton (1973), who attempted to measure students' expressive engagement (active student attention to, or involvement in, a learning task) levels while increasing their teachers' use of two teaching strategies, and to determine whether observation, feedback, and training, used together, constituted a practical means for promoting changes in the teacher's use of the two strategies. The teaching strategies were "personalizing the task" and "recognizing individual achievement." Observers recorded the use of the strategies by three third- and fourth-grade teachers and the associated levels of engagement by the students.

The observers met with teachers after each session to discuss the observational data and to suggest methods for increased use of the strategies. The results showed that observer feedback was effective in modifying teacher behavior. Large increases in teacher use of the strategies were found. Even so, the data on student engagement showed no consistent relationship to the increases in strategy use.

Self-observational data

Research on the use of self-observation instruments has been conducted with increasing frequency in recent years. Assessment efforts have found that there are many areas of his or her own teaching that the teacher can evaluate without the aid of expensive external observers or videotapes. The choice of evaluation instruments for use in self-observation, however, can be a problem due to the great number available. According to Bailey (1977), while commercially-made observation instruments have proven valuable in self-assessment practices, recent research indicates that self-made observation instruments are equally or more valuable to classroom teachers. This conclusion emerges from a series of action research projects conducted by Bailey at Kansas State University. Class members, given a series of directions, made their own classroom observation instrument. The advantage of such self-made instruments is that the teacher can define the attributes deemed most pressing given his or her peculiar situation. Bailey concludes by stating that self-made observation instruments should be an integral component in the hierarchy of self-assessment.

Thoresen, Hubbard, Hannum, Hendricks, and Shapiro (1973) compared three types of self-observation training with regard to their effects on the accuracy of self-observation training with regard to their effects on the accuracy of self-observation by a nursery school teacher. First, positive verbal behavior was observed, followed by positive nonverbal behavior. Self-observation was carried out by recording occurrences of one's behavior of a given kind with a wrist counter. Then one of three types of training was given: minimal, feedback, and discrimination. The effect of self-observation on the behaviors observed was assessed. The results demonstrated that minimal and discrimination training improved accuracy, that accuracy began to decrease in the absence of feedback, and that self-observing tended to alter the frequency of the behavior being observed.

Coates and Thoresen (1974) after reviewing the literature on teacher anxiety, argued that teacher anxiety be regarded as a kind of performance and measured directly in classroom situations through external and self-observation. This method would yield data for use in investigations of causal relationships between particular events and anxiety as well as between anxious teacher behavior and student performance. The authors also discussed some techniques for reducing teacher anxiety, such as systematic desensitization, they suggested that these techniques be incorporated into teacher education programs and then experimentally evaluated.

Videotapes, the subject of the next section, is the area in which the greatest amount of research with respect to self-observation has been conducted. Nonetheless, it is apparent from this discussion that the elaborateness surrounding videotaping is not always necessary. This is particularly true for teacher behaviors which are easily discerned and recorded. A simple checklist which the teacher can fill out at the end of the school day can be enlightening as to the teacher's activities. If past research is any indication, we can anticipate an increase in studies of self-observation techniques--their fidelity and their effects on teacher behavior.

Videotapes

The practice of showing individuals videotapes of themselves for purposes of assessment and possible change is now widespread. A cursory look through the educational literature reveals the use of such feedback with students and teachers in almost every area imaginable: elementary, secondary, preservice, inservice, speech, vocational and technical, science, foreign language, mathematics, engineering, and counseling. According to Fuller, Baker, and Manning (1972), the most popular target populations are preservice teachers, counselors in training, and patients in therapy.

Many writers (e.g., Dawson, Dawson, & Forness, 1975) contend that the self-confrontation literature generally supports the use of video feedback as an effective means of changing teacher behavior. But, at the same time, such feedback is rather complex in its application. Leonard, Gies, and Paden (1971) found that videotapes had greater impact on the classroom

behaviors of student teachers than did audiotapes and regular supervisory feedback. In attempting to explain the general efficacy of videotape feedback, Salomon and McDonald (1970) concluded that self-viewing informed the teacher of how much actual behavior differs from expectations. As noted earlier with respect to ratings, the discrepancy between expectations and perceived behavior may motivate change.

Most studies involving videotapes have focused on their role in promoting changes in teacher behaviors. Other studies have looked at the role of videotapes in producing what might be termed "personal change." Such "personal change" refers to changes in teachers' attitudes toward themselves and their students, self-confidence,realism, accurate perceptions of what is happening, and ability to establish positive relationships with others. Research relating to both types of purpose are discussed below.

One example of an experiment in using video- and audiotapes to change teacher behaviors is that by Galassi, Gall, Dunning, and Banks (1974). They used three groups of inservice teachers. One group received a videotape presentation of a training program on questioning skills. A second group received a written version of the program. The third group was a no-treatment control. Audiotapes of the teachers' classroom discussions were collected before and after training and scored for percentage of higher cognitive questions asked, number of probing and refocusing questions, and number and length of student responses. Results indicated that both modeling groups were overall equally effective and superior to the control group in posttest gains. In a few comparisons, written modeling was superior.

Eisenberg and Delaney (1970) investigated the effectiveness of videotapes in counselor training. The counselor behavior trained was a counselor tacting response lead (CTRL)--a counselor response lead that would evoke a client tacting response. A client tacting response was defined as a verbal response that would either describe a particular abstract concept in more operational terms or would give specific examples of what the client was trying to communicate. Subjects were exposed to a videotape in which a trained counselor emitted CTRL's in response to clients, or the subject had to offer the CTRL's, or both. Effects on transfer to a live

situation were also assessed. Results showed that systematic exposure to a model presented on videotape significantly influenced subjects' responses to clients seen on videotape but not to live clients. One possible reason for the failure to demonstrate transfer effects, according to the authors, is that the CTRL is a response used most appropriately at the goal-setting stage of counseling. Since live clients appeared for only one session, the subjects' failure to use the CTRLs may have occurred because they had learned that it was inappropriate during the first counseling session.

Would time-lapse photography used in the observation and supervision of experienced teachers increase the accuracy of teacher perception of student attending behavior and the level of student attending behavior? Houde (1971) used such photography in classrooms, and teachers received photographic feedback only, verbal feedback only, both types of feedback, or neither type of feedback. The results showed that, as compared to the control group, the experimental (feedback) groups of teachers showed significantly more accurate perceptions and their students showed significantly more attending behavior. But this finding is due substantially to the increases shown by teachers in the group receiving both types of feedback. While teachers and students in the groups which received only verbal or photographic feedback also improved, the gains were smaller. Thus it appears advantageous to use verbal feedback together with slides.

The effectiveness of self-recording versus auditory cues in prompting teacher classroom praise was investigated by Van Houten and Sullivan (1975). After measuring the baseline praise rates in the teachers' classrooms, two methods for increasing praise were introduced according to a multiple-baseline design. During the first phase, teachers were instructed to count and graph their praise rate during each session. During the second phase, teachers received auditory cues (beeps played on a cassette recorder and delivered on the school's public address system by the experimenter's pressing a switch according to variable schedule averaging twice per minute) to prompt praise. Results showed that the introduction of cues markedly increased teacher praise rates. The auditory method was more effective than the self-recording. The authors speculate that auditory cueing was more effective than self-recording because it provided a

frequent discriminative stimulus to look at and attend to student behavior. In the absence of cues, teachers tended to become so busy with other activities that they forgot to praise.

Dawson, Dawson, and Forness (1975) reported two studies using video feedback. In the first study, two teachers of adolescent students were given video feedback of their teaching behavior in regard to two types of teacher "postures." Posture 1 was defined as including one or both of the following teacher behaviors: (a) kneeling or sitting next to the student at eye level and (b) use of hand gestures and animated facial expressions. Posture 2 was defined as including one or both of the following: (a) standing over the student and (b) restricting use of hand motion and facial expression. Results showed that, after viewing videotapes of their actual teaching, both teachers displayed an increase in Posture 1 behaviors and a corresponding reduction in Posture 2 behaviors. Experiment 2 was essentially a replication of the first study but also investigated whether the corresponding changes in teacher behaviors affected student performances in a positive way. Experimental-group teachers were given video feedback at the end of the baseline period, while control-group teachers received no video feedback. Results showed that experimental-group teachers demonstrated a significant increase in Posture 1 behavior and a decrease in Posture 2 behavior relative to the control-group teachers, whose behavioral patterns remained relatively stable. All of the pupils assigned to the experimental teachers showed an increase in their academic response rate, while of the pupils assigned to the control teachers, one showed a decreased academic response rate and one a slight increase.

The effectiveness of videotape feedback in promoting brainstorming in groups was investigated by Walter (1975). Subjects were given training in group problem-solving, after which they were videotaped during a problem-solving session. Various subgroups were then given no feedback, or verbal feedback, or a videotape of their session, or a videotape of a model group, or both of the videotapes. After this phase, the various groups attempted to solve another problem. Modeling and the combined effects of modeling and video feedback from the first session resulted in significantly higher

brainstorming performance than the other conditions. Seeing only a videotape of its past performance was ineffective in promoting the group's problem-solving ability.

Salomon and McDonald (1969) examined the results of viewing one's own teaching performance on videotape when no standards of desired teacher behavior were presented in advance of the viewing. The authors hypothesized that attitudinal changes taking place after the self-viewing would be related to the degree of expressed satisfaction with one's past performance and that self-reported satisfaction with one's own performance would also relate to patterns of information selection. Teaching interns were videotaped while teaching a standard lesson. They responded to an attitude questionnaire and were interviewed after teaching the lesson. Then they viewed a portion of the videotape and completed a second questionnaire and interview. The results supported the hypotheses. Self-viewing was followed by attitudinal changes related to the subjects' predispositions, such as self-attitudes, satisfaction with their performances, and anxiety. Thus, satisfaction with one's performance in the past determined what was noticed on the screen, how it was evaluated, and the attitudinal changes to which it led.

After a major review of the results of many studies concerned with self-evaluative changes resulting from videotape feedback, Fuller and Manning (1973) concluded that self-confrontation performs several functions. Its value lies in its ability to communicate negative information which others could communicate but are reluctant to provide or could not give in a totally acceptable manner. Such negative information as gained through videotapes is disorganizing at first, and it seems imperative that follow-up of some sort be provided. This may help to explain the finding discussed above in which videotaping plus verbal feedback seemed more effective than either alone. Finally, self-confrontation also seems to have nonspecific effects depending on the individual. The camera itself apparently can become a therapist to whom the individual can relate. It permits the subject to derive from it what he or she will. Whereas specific treatments control the individual, videotaping can be used as the person desires.

There is, however, some evidence to suggest that videotape feedback may be harmful, at least for some individuals. After extensively reviewing the literature on video feedback as used in teacher education programs, Fuller and Manning (1973) concluded with the following:

> Those who are vulnerable and without capacity to change can be damaged. It is possible that the true potential of this treatment has never been completely tapped because immediate effects are so powerful that the helper senses the potential for harm and either tries to protect the person from its impact by a task orientation (as in microteaching), or else fails to follow through to the in vivo situation (as in psychotherapy) (p. 511).

As Travers and Dillon (1975) note, individuals who are comfortable about themselves and the way they look stand to benefit from the technique. Also, those who are more open to change seem comfortable with the procedure; however, such openness, if carried to an extreme, has a negative quality in that the individual may be a "yea-sayer" in order to please the critic and not be sincere about changing.

Travers and Dillon suggest that, to lessen the potential negative impact of videotape feedback, the tape be played back several times so that the individual can lose any excessive degree of self-preoccupation and thus be able to make some objective observations. Also, another technique to lessen this self-preoccupation is to have the student close his eyes and listen to the audio portion. In short, videotape feedback may be a valuable addition to teacher training programs but only if used discriminatively, that is, in a way that takes into account the student's reactions.

The future for videotaping seems complex. More studies are needed to investigate the long-term effects of videotaping on teacher behavior and the subsequent effects on pupil performance. Especially, what is needed are more studies comparing the effectiveness of videotaping with that of other means of providing feedback, simply because videotaping is expensive in terms of equipment and personnel and, as noted above, it may distract teachers from important to less important, or cosmetic, aspects of their teaching.

Microteaching and Minicourses

As noted in Chapter II of Part 1, with the advent of microteaching and minicourses, teacher educators felt they possessed techniques which, it seemed intuitively, should be effective in improving the teacher's "knowledge how." Microteaching has received the greater amount of attention, and there is a significant body of research literature on the subject. This is not meant to slight the value of minicourses. According to Borg (1975), initial evaluation research indicates that minicourses can change teacher behavior in the classroom and that at least some of the changes become a permanent part of the teacher's classroom repertoire. Minicourses are relatively expensive to develop, test, and modify--a point that will be further discussed later--but they could be worth the cost if, as Borg holds, minicourses could contribute to a substantial improvement in teacher education.

Microteaching

As has already been noted, microteaching represented a significant departure from traditional forms of teacher training and research. It is a teaching situation scaled down in terms of time and numbers of students. Generally, this has meant a 4-20 minute lesson involving 3-10 students. The lesson is also scaled down in terms of the teaching practices on which the teacher focuses. A microteaching lesson is usually followed by some form of feedback and critique. The feedback may come from videotapes, audiotapes, peers, students, supervisors, or the teacher's self-perceptions.

Microteaching is <u>not</u> simulated teaching; instead, a real teacher teaches a real lesson to real students. Although some studies report using peers as students, Cooper and Allen (1970) do not consider this valid microteaching. While such "peer teaching" may be valuable in its own right, the peers are essentially role-playing, and thus the teaching situation lacks some of its intended authenticity.

The advantages of microteaching are obvious. Instead of having students gain all their real-life teaching experience in student teaching stretching out over six months to a year, they can be allowed to gain some of it through microteaching. It is a time-saver since students can typically get acclimated to the teaching situation in a much shorter period.

It allows the teacher to concentrate on a few skills at a time without being inundated with the plethora of duties and details surrounding normal teaching. When used in conjunction with video- or audiotape feedback, microteaching allows the student to receive feedback immediately after the lesson, when the details are still fresh, instead of receiving it long after the lesson on the basis of the supervisor's memory.

The disadvantages, however, are equally obvious. By its very nature, microteaching is less real since it is scaled down. As such, it does not give the teacher the opportunity to deal with all the complexities of classroom life that powerfully influence teaching. What works in microteaching could conceivably be less effective in a real classroom setting for this reason. Another disadvantage concerns the physical setting. A special area in which to conduct the lesson must generally be available. If videotaping is used, equipment and personnel requirements are greatly expanded. At the least, some form of immediate feedback is necessary, thus increasing session time.

In their review of microteaching literature, McKnight and Bush (1977) state that, although several studies have focused on comparisons of microteaching with other forms of teacher training, most of the current research has attempted to develop and refine the components of the program. Such developments include interaction analysis, different configurations of modeling, feedback, and supervision, the effects of microteaching as a basic research strategy, applications to training settings outside the United States, and the use of microteaching in assertion training and self-counseling. Some of this research is described below.

An example of a study comparing the effectiveness of microteaching with that of other teacher training methods is that by Kallenbach and Gall (1969). Elementary school interns were randomly placed into one of two training programs: microteaching during the summer, or conventional classroom observation and student teaching in schools during the summer. Student teachers were rated on teaching an actual lesson after the training and one year later. Yet the authors concluded that microteaching was superior because it achieved similar results in only one-fifth the time and with fewer administrative problems as compared to the traditional method. A secondary finding was that pretraining ratings of teaching

performance based on a videotaped lesson were generally good predictors of later teacher effectivenss ratings.

Copeland (1975) evaluated microteaching on its effectiveness in teaching two skills and on the durability of the skills. Half of a group of elementary school student teachers did microteaching aimed at inculcating two behaviors: "asking higher-order questions," and "asking probing questions." The other half did no microteaching. At the end of training, experimental teachers demonstrated these behaviors significantly more often than control teachers. Nonetheless, in a subsequent classroom assessment occurring 8-20 weeks after training, the two groups showed no significant differences in the frequency of the behaviors. Copeland dismisses the idea that the experimental teachers merely forgot the behaviors, but instead challenges as simplistic the idea that microteaching performance should be significantly related to classroom performance. Instead, he believes that other factors interfere with the use of microteaching-trained behaviors in the classroom--factors such as supervising teachers' attitudes, classroom context, and pupil demands.

Thew (1973) investigated the effectiveness of microteaching that was supplemented by workshops and specific feedback. Three microteaching sessions for elementary school student teachers were observed. The microteaching sessions were scored in terms of dimensions of the Social Organization Category System developed by Thew--dimensions such as organizational skills with small groups and the ratio of pupil to teacher talk. One group received only microteaching, a second group received microteaching plus a workshop on the concepts, and the third group received microteaching, the workshop, and specific feedback on their microteaching. Results showed that the group receiving all three treatments significantly outperformed the other two groups, which did not differ from each other on the posttest. Microteaching by itself was effective in raising the level of behavior displayed in the posttest from pretest level. But the addition of the workshop and the specific feedback made even greater differences.

A few studies have investigated whether a particular type of student reacts more positively to microteaching. The aptitude-treatment approach (Cronbach & Snow, 1977) in education suggests that certain teacher attributes

might facilitate effect of the microteaching experience, while others could interfere with it. Hargie, Tittmar, and Dickson (1977) hypothesized that, since microteaching demands self-exposure, students who were extraverted rather than introverted, and those who were emotionally stable, would have more positive attitudes toward microteaching. Subjects for their study were three groups of students at Ulster College; students were enrolled in the Art Teacher program, the Craft Teacher program, or the Physical Education Teacher program. They hypothesized that physical education students would be the most extraverted and the art students the least, that there would be a positive relationship between extraversion and favorability toward microteaching, and that the physical education group would hold the most favorable attitudes toward microteaching. The results showed that the physical education students were in fact the most extraverted and reported the most favorable reactions to microteaching. But the hypothesis of a positive correlation between extraversion and favorable reactions to microteaching was not supported.

A new approach to microteaching, called "miniteaching" has recently been discussed (Hargie, Dickson, & Tittmar, 1976). Some of the basic changes are as follows. For one, the use of a "reteach" has been abandoned. The authors state that there is little evidence to support this aspect of a microteaching program. Instead, it has been replaced by the idea of attempting to integrate the teaching skills at certain stages throughout the program. In this way, the student is encouraged to regard the microteaching skills as interactive variables rather than as completely discrete units. Another change involves the lesson length. It is gradually increased from very brief to up to 30 minutes. The emphasis here is on building up the training to better approximate the real classroom situation. Likewise, the number of students is gradually increased, from about five to twenty-five. Lastly, when student teachers are diagnosed as having difficulties with the use of certain skills, they are referred to a remedial program of miniteaching. At this point, they can concentrate specifically on their diagnosed weaknesses.

The interested reader is encouraged to consult of the many recent research reviews and bibliographies on microteaching. McKnight and Baral

(1969) compiled a review of research conducted at Stanford University during the period 1963-1969. This significant article traces the work on microteaching since its inception at Stanford in 1963. Ward (1970) studied the status of microteaching in the late 1960s. He reported on the number of universities and colleges accredited by the National Council for Accreditation of Teacher Education that were using some form of microteaching in their secondary teacher education programs, on the curriculums used, on how the curriculum was modified to incorporate microteaching, and on what modifications were made to the microteaching program to facilitate its incorporation.

An excellent example of the international flavor of microteaching is furnished by Turney, Clift, Dunkin, and Traill (1973), writing in Australia. This report reviewed the theory and research on microteaching and research on those skills of teaching with which microteaching has been intimately concerned. The nature and extent of microteaching in Australian teacher education institutions were surveyed, and suggestions concerning the future of microteaching were made.

Recently McKnight and Bush (1977) have compiled an annotated bibliography on microteaching. After reviewing the literature, these authors offered several conclusions. First, it appears that microteaching has changed little since its original conception at Stanford. Second, in-service programs and materials with extensive development are preferred by teachers. Teachers recognize and appreciate the vast amount of research that has been conducted with microteaching. Third, training programs most frequently emphasize the skills of set, closure, and questioning, and research on the last of these is especially emphasized, possibly because it is at a more formative stage of development. Fourth, the usefulness of microteaching to competency based programs is another frequently-explored research topic. And finally, the value of the microteaching approach in helping people to learn more about their personal and professional behaviors is shown in numerous studies of such variables as self-confrontation, self-evaluation, and attending behaviors.

As for future research directions, McKnight and Bush recommend more work on comparisons using peers versus real students in the microteaching

setting. Real students make the setting more realistic, but they are also more difficult to come by, particularly on university campuses. Also, the authors recommend more study of teacher decision-making, that is the ways in which teachers select and use microteaching skills in later, actual classroom situations. These and other areas make it clear that although a large microteaching literature exists, there is a definite need for further research.

Minicourses

Microteaching was developed primarily for use in preservice teacher education. However, as mentioned previously, the equipment and personnel requirements surrounding microteaching made it somewhat unwieldy for use in in-service teacher education. What was needed was a relatively self-administrable version of the microteaching idea. As Borg and his co-workers (1970) at the Far West Laboratory for Educational Research and Development have described its history, the minicourse was developed on the basis of the microteaching approach originated at Stanford. The minicourse is a packaged product containing instructional films, handbooks, and evaluation forms; the process of microteaching; and an organization of product and process known as the instructional sequence. An example of minicourse organization was described by Langer (1976).

About a dozen minicourses have been developed, tested and marketed. The testing consists of an experiment in which teachers are first observed to determine their initial levels of the teaching skills addressed in the minicourse. Then the teachers self-administer the minicourse. After this, the teachers are observed again to determine the quality of their behavior. Such later observation generally occurs in the teacher's actual classroom some time after the end of training.

Borg (1972) reported a convincing demonstration of minicourse effectiveness. Among the behaviors trained were "Redirecting the same question to several pupils," "Framing questions that call for longer pupil responses," "Seeking further clarification and pupil insight," and "Not repeating pupil answers." Videotape recordings of the participating teachers were made before, immediately after, four months after, and 39 months after training. The results showed that the minicourse significantly changed most of the

question-asking behaviors that it was intended to change.

In an excellent article describing the development of minicourses, Borg (1975) concluded that they were effective in changing teachers' classroom behaviors and that at least some of the changes brought about could become a permanent part of the teacher's classroom repertoire. But there are two qualifications on this statement. First, minicourse research has only addressed a handful of teaching behaviors, and there are many more, of which many are still unidentified which would have to be changed to develop a highly competent teacher. While this limitation may, at first glance, seem to exist only because of limited ingenuity on the part of minicourse developers, in fact costs play a significant role. Borg kept detailed records on the development of the early minicourses, and found that developing a single minicourse from the initial planning stage to its release to a commercial publisher consumed about 200 man-weeks of research and development effort and cost approximately $100,000. With considerable significance for the organization and financing of teacher education, Borg (1975) states, "Not even the great universities have had the time and money to carry out this task for a total teacher education program, and the typical teacher's college has virtually no chance of developing such a program" (p. 312).

Minicourses have also been somewhat developed abroad. Since 1972, the Teaching Skills Development Project in the Department of Education of the University of Sydney has been engaged in the production of video-tape-based courses on specific teaching skills (Teaching Skills Development Project, 1973). These courses have been developed for use by both elementary and secondary school teachers in both pre- and inservice teacher training programs. The primary purpose of the courses is to develop in students a practical understanding of specific, definable, and observable behaviors believed to be significant in effective classroom teaching. Some of the skills addressed in this program are guiding small group discussions, reinforcement, basic questioning, small group teaching, and individualized instruction.

The requirements in money and time to develop, test, and modify a minicourse are formidable. Perhaps a more economical option is to include

skill-development techniques in on-going interventions or else build them into research proposals. An example of the former is that by Whitmore, Crist, and Marx (1974). They worked in a three-year research program designed to investigate problems of motivation and achievement in schools serving students of low socioeconomic status. An in-service education program for teachers was designed to increase the positive reinforcement of pupils and thereby increase student achievement. During a five-day workshop held prior to the start of the school year, the researchers presented concepts relating to motivation, nonpunitive techniques for controlling undesirable pupil behavior, the theory of positive reinforcement, and group and individual problem-solving skills. During the school year frequent miniworkshops provided materials and gave teachers opportunities to share their experiences. Evaluations at the end of the school year indicated that although the researchers' major goals of changing teachers' and pupils' attitudes and pupil achievement were not achieved, many desirable changes were observed in some teachers and their pupils.

A final example is the study conducted by the Program on Teaching Effectiveness of the Center for Educational Research at Stanford during the 1976-77 school year (Program on Teaching Effectiveness, 1977). Designed primarily to determine whether certain teacher-behavior variables that were positively correlated with pupil reading achievement in the third grade had causal efficacy, the study included training materials for teachers. One group met in five two-hour discussion groups to discuss role play, and view tapes of the behaviors being recommended. A second, "minimally" trained, group merely received printed training packets with criterion-referenced multiple-choice questions. A third group received no training. All three groups were observed for a full day every two or three weeks before, during, and after the training. Since the results of this study are currently being analyzed it is not possible to conclude whether this method was effective in changing teachers' behaviors. If the "minimal" method proves effective, it seems worthwhile to develop it further since it represents a means of presenting minicourse concepts in a significantly less expensive fashion.

Chapter III. TEACHERS CENTERS

The growing number of teachers centers in this country is considered by many to represent the most promising of recent developments in inservice teacher education. The creation of specially designated places run for and by teachers is indeed a marked departure from previous efforts to improve teachers and teaching. It is interesting to note, however, that this innovation has as its precedent not only the well-established teachers center movement in Britain (Lickona and Hasch (1969) report that well over 600 British centers are operative), but trends in actual classroom practices as well. Specifically, centers for teacher education can be viewed as an extension of resource and learning centers for students (Wilson, 1977). Both innovations share a common "humanistic" educational philosophy.

Background

The parallel between teacher centers and student centers cannot account fully for the strength of the American teachers center movement and the optimism that accompanies it. As Devaney (1977a) suggests,

> The compelling evidence about teachers centers thus is not where they have gotten to--hard data about effects on teachers; but rather where they are coming from--the opposite direction from conventional inservice, which teachers deride even under its new moniker of "staff development" (p. 21).

Understanding how teachers centers represent both an organizational and a substantive reaction to previous strategies of teacher education is important for assessing both the present state and future possibilities of teachers centers. A sizable literature details the many faults in standard approaches to preservice and inservice teacher education. It will suffice here to summarize briefly some of the main forces that have contributed to the shaping of the teachers center movement.

Nicholson, Joyce, Parker and Waterman (1976) identify three organizational sources of pressure behind collaborative training efforts such as teachers centers. The first is the popularization in the 1960s of the English approach to informal teacher education. This popularization resulted in the generation of new demands by parents' and teachers' interest groups. A second and related source of pressure is the growing militancy of teachers' organizations during the past decade. Leaders of both the National Education Association and the

American Federation of Teachers are opposed to inservice teacher education mandated by school administrators (Kemble, 1973). The notion of teacher-initiated and controlled centers, on the other hand, is consistent with the position of these organizations, and it is not surprising that their political resources, based on a membership approaching two million (Wirt & Kirst, 1975), have resulted in action. The third source of pressure discussed by Nicholson, et al., is the public's general disenchantment with public education. State and federal governments have responded to this disenchantment by sometimes requiring school districts to affiliate with higher education institutions, communities, and teachers' organizations in the creation of teacher education programs.

It is also possible to identify more immediate barriers to effective teacher education. Jackson (1971), for instance, suggests that many teachers suffer from a lack of professional pride and responsibility, reflected in teaching that falls short of teachers' actual capabilities. Jackson also noted that teachers do not have the time or opportunity to critically evaluate their own and their colleagues' practice, and that teachers have no means for easily communicating and sharing their successful techniques. "One-shot" approaches to inservice teacher education and the social chat in the teachers' lounge do little to remedy these problems. The unfortunate result, Jackson suggests, is that "each teacher becomes, in a sense, a solitary craftsman, inventing on his own hook procedures and ways of working that have already been perfected by his colleague down the hall" (p. 29).

Guidelines for Teachers Center Development

An identification of the sources of dissatisfaction with conventional teacher education programs is not sufficient by itself to guide the actual planning and operation of teachers centers. An additional and essential ingredient in the general literature on teachers centers are the studies that have examined and found characteristics associated with successful programs and training. This is not to say that all teachers centers do incorporate these characteristics. It is apparent, nonetheless, that these sorts of findings can serve as guidelines for reform efforts through teachers centers.

Foremost among these studies is the one by Berman and McLaughlin (1975), more commonly known as the RAND Change Agent Study. Although this was a survey of the fidelity of fit between federal program plans and their implementation in 293 sites across the nation, McLaughlin (1977) argues that the study's findings are "very transferrable" to staff development programs. The major components found present in successful instances of program implementation include:

— a problem-solving orientation rather than an opportunistic orientation at the site level;

— an emphasis on concrete on-going training rather than technology;

— an emphasis on practical issues rather than theoretical concepts;

— a reliance on locally developed materials rather than materials provided by outside consultants;

— on-line planning, namely, project planning that continues throughout the duration of the project;

— critical mass, meaning enough people collaborating in the project to provide participants with support and to have a visible impact.

McLaughlin (1977) also reports a follow-up study she conducted to verify the applicability of the findings to staff development programs. This work was based on an intensive study of teacher education programs in five school districts. McLaughlin concludes that the least effective staff development programs were based on the "deficit model," portraying teachers' problems as stemming from inadequate information and skills. District standardization, low expectations of teacher abilities on the part of district administrators, little staff participation, and salary or relicensing incentives also characterized these programs. The more effective staff development approaches, in contrast, were lacking an identifiable "program." Instead, these programs were characterized by a pervasive attitude that teachers are professionals and responsible for their own problems and activities, the existence of attractive and comfortable teachers centers, a lack of standardization, the use of local resource people, joint governance by teachers and administration, and release time as an incentive.

A recent review of the literature on curriculum and instruction implementation (Fullan and Pomfret, 1977) and a survey on inservice teacher education (see Nicholson, et al., 1974, p. 22), corroborates these kinds of

findings. While these reports usually do not make clear the criteria used to differentiate the more successful from the less successful approaches, the apparent consistency of the findings no doubt is enough to recommend them to many teachers center advocates.

Kinds of Teachers Centers and Teachers Centers Activities

The seven-category classification of teachers centers by Schmieder and Yarger (1974) was presented in Chapter II, Part 1, of this report. This typology differentiates centers on the basis of their structural and political features, ranging from unaffiliated independent teachers centers to consortium teachers centers mandated by law. Existing teachers centers do not fall in equal numbers along this spectrum. Nicholson, et al., (1976), concluded that "the trend is definitely toward governance by consortium, at least among those centers that are large or important enough to be reported in the literature" (p. 50). This trend toward consortium-type centers also can be anticipated on the basis of the Education Amendments of 1976 (Public Law 94-482). Sections 531 and 532 of the amendments authorize large sums of money for the development and maintenance of teacher centers (potentially $68 million a year) while also requiring that teachers centers policy boards include representatives of the local school district and nearby institutions of higher learning.

Feiman (1977) suggests that differentiating teachers centers on the basis of their underlying ideological assumptions may be more revealing. She identifies three prevailing ideologies among teachers centers: behavioral, humanistic, and developmental. Behaviorally-oriented centers focus on the diagnosis of teachers' problem areas and the prescription of appropriate skills training; they are a continuation of the technical approach to teacher education. Feiman also considers these centers to be representative of the "deficit model," a characteristic that was associated with ineffective staff development programs, according to McLaughlin (1977). The existence of these kinds of centers suggests the disturbing possibility that a "fresh and potentially innovative idea can be used to deliver old wine in new bottles" (Rogers, 1976, p. 404).

Humanistic teachers centers are patterned after the British model. These centers seek to provide teachers with an atmosphere conducive to teacher

self-motivation and self-improvement. Feiman notes evidence that these centers rarely address broad curricular issues or specific classroom problems. The assumption that a proper learning atmosphere alone can produce learning also is questioned.

Developmental centers view teacher growth as resulting from long-term involvement, independent initiative, and the conceptual tools for critical judgement. Furthermore, it is assumed that center support and encouragement can result in "kinds of teacher behaviors which indicate more developed stages of professional functioning" (p. 94). Feiman suggests that developmental centers have yet to demonstrate the ability to engender long-term and valuable changes in teachers' professional lives.

Feiman's description and analysis illustrates how each of the three categories of teachers centers has its own special conceptual and empirical shortcomings. But, as Gage (1977) points out, each of the centers no doubt has its advantages as well, and different "ideological" orientations should not preclude a sharing of these strengths.

The teachers centers typologies discussed thus far should not be taken as proof of considerable conformity among groups of centers, for, as Devaney (1977a) stresses, despite commonalities, "no single description will fit even two centers..." (p. 16). The rich variety among teachers centers is perhaps nowhere better illustrated than in a directory of 78 teachers centers, located in 24 states, published by the Teachers Centers Exchange at the Far West Laboratory (Lance & Kreitzman, 1977). The directory includes information about the director, programs, resources, staff, affiliation, and support of nearly every center. Even a cursory examination of the directory confirms the diverse nature of teachers centers:

> Some are full-fledged and long-experienced, others have barely begun; some are comprehensive inservice schemes, but many are focused programs aiming to serve a defined and limited group of teachers; some serve only one specific need of teachers, such as for math curriculum or for a raw materials resource for curriclum-making; some centers are for teachers only, others define "teachers" as parents, community people, or anyone from whom children learn; some are school-district (or multi-district) based; others are university-based, and still others are independent, nonprofit organizations (p. xviii).

Some of the literature on teachers centers clouds the substantive aspects of the centers by only using such descriptors as "self-renewal," "stimulation," and "sense of community." But information sources such as the Far West directory, and an increasing number of "case studies" of teachers centers (e.g., Buxton, 1976; MacLaren, 1976; Sproul, 1977) help answer the question, What do teachers actually do in a teachers center? As already suggested, many centers use approaches and techniques that are far from new on the scene of teacher education.

The great majority of centers in the Exchange (Lance & Kreitzman, 1977), for example, offer short workshops during school or after-school hours. These workshops address a broad but already-popular range of topics. If these workshops are "new" in any way, it is because some of them are taught by teachers instead of authorized teacher educators. The Teaching/Learning Center in Charlotte, North Carolina, has videotape equipment, audiovisual facilities, and an extensive library. A teacher education center cooperative between school districts and the University of Maryland (Teacher Education Center Program, 1975) emphasizes teams consisting of pairs of preservice and inservice teachers.

That teachers centers may be using techniques and materials long available for staff development is not surprising, nor does it imply that these center programs are merely the same old thing in a new guise. What is important is that these familiar approaches are being carried out in the context of a teachers center. It seems reasonable that elements of a "center" context can provide a more fertile ground for the impact of familiar approaches. These elements include actual plant facilities, changed teacher attitudes, better incentives, increased and long-term availability, and a greater degree of profession-oriented interaction. To the extent that teachers center programs do not capitalize on the very qualities that make them "centers," one can anticipate their having a fate similar to that of other preservice and inservice programs.

In addition to the conventional teacher training strategies, at least two kinds of activities appear to be indigenous to many teachers centers. One of these is dubbed "make-and-take"--workshops where teachers are presented with a model of a curriculum aid, learning device, or game. Teachers receive

the raw materials and instructions for making and using their own copy of the model, one which they can take back to their own classrooms (Lance & Kneitzman, 1977). "Make-and-take" products often are composed of recycled "scrounge" materials. Observers disagree on the educational benefits of "make-and-take" activities. Feiman (1977) suggests that "make-and-take" workshops focus teacher concerns on how something is made rather than the uses and implications of the product. Devaney (1977a), on the other hand, argues that "make-and-take" is a means of communicating with teachers, communicating about curriculum, and thereby assessing individual needs. The difference between the two views may simply be the difference between what usually happens and what should happen.

Another feature commonly found in teachers centers is an "advisory system." A teachers center advisory system is based on the beliefs that teachers are individual professionals in control of their own growth and that authoratative direction is unnecessary (Manolakes, 1977). A center advisor, then, does not evaluate or supervise teachers, but rather tries to encourage them through a variety of services. The advisor may give curriculum workshops, discuss teaching theory and problems, work with teachers individually in the center, and work alongside teachers in their own classrooms. Mai (1977) concludes that "a key characteristic of successful advisory work is patience, and an appreciation for the necessity of dormancy in the self-development of professionals" (p. 129). A related priority, he suggests, is that the advisor provide long-term and continuous assistance to teachers.

Teachers Center Networks

Many teachers centers are involved not only in creating consortiums within their centers, but in forming consortiums with other centers. This kind of organization, where one center is affiliated with one or more other centers is referred to as an informal "network." Tucker (1977) defines an informal network as "loosely structured communications among people with common purposes and common values" (p. 308). These networks are formed naturally in the sense that a center "joins" out of a desire to share and gain ideas. Tucker suggests that teachers center networks will have a critical role in the success of teachers centers by linking well-established and experienced centers with emergent centers.

The aforementioned Teachers Centers Exchange at the Far West Laboratory is one such network. Supported by government and private foundation funds, this network serves a number of purposes, including the writing and circulation of reports, the spotlighting of valuable outside resources, facilitating visits to centers, scheduling meetings for interested persons, and trying to answer the inquiries and requests of educators, teachers center personnel, and laymen.

Informal networks of teachers centers are already producing visible products (Lance & Kreitzman, 1977; Devaney, 1977; Hansen, 1976). Just as individual centers seek to provide a supportive environment for each teacher's sense of professionalism, networks should be organizational and communication tools for assuring the success and stability of individual centers. Truly interactive networks should strenghten the best aspects of all varieties of centers. A sharing of their strengths should help resolve counterproductive ideological and organizational differences.

Concerns

While the number of teachers centers in this country may now run upwards of 4,500 (Schmieder & Yarger, 1974), centers are still a relatively new phenomenon. They are far from being the established standard in preservice and inservice teacher education. Most of the litereature on teachers centers reflects the enthusiasm of a fresh enterprise. Most of the writing consists of case studies of individual centers, usually by center personnel. While general literature on teachers centers is becoming more plentiful, there is still little work in two major areas: (a) critical analyses of the issues and problems facing centers at all levels of operation, and (b) research on, and evaluation of, teachers centers. Both of these areas will be examined briefly in the remaining sections of this chapter.

The teachers centers movement has implications for nearly all aspects of the educational enterprise, ranging from individual student and pupil interactions in the classroom to the political arena composed of federal and state governments, teachers unions, and public demands. The complexity of the relationships among these levels permits the identification of only a limited number of salient issues and concern. Furthermore, some of these

issues and concerns may disappear, and new ones may arise as a result of increased litigation, networking, and the growing stability of the center approach. Presented here are a few major concerns having to do with teacher practice and the teachers centers.

The first concern has to do with whether teachers really have a determining role in how centers are run and what centers teach. As Van Fleet (1977) points out, "becoming partners on an equal basis and sharing power that was once centralized can be accomplished much more easily in legal language than in reality" (p. 420). The legal language already exists, for the Education Amendments of 1976 state that teachers center policy boards must have teachers in the majority. Nonetheless, the demand that centers also operate as consortiums still leaves open the possibility that administrators and members of institutions of higher learning will make the major decisions. This distribution of power has a long history in teacher education. Forces that serve to counteract this pattern are growing teacher militancy and network communication with successful teachers centers. At this time it seems apparent that teachers will support and participate in only an approach to professional education that allows them control.

Assuming that teachers do exert control at the site level, we find that a related concern is the extent to which teachers will be able to determine their own needs and answer them. For example, will teachers be able to distinguish between immediate needs and long-term needs (Burnell, 1976)? Also, will teachers react to a history of "top-down" staff development programs by avoiding substantive, systematic, or research-based approaches to teacher education? Accounts of shallowly conducted make-and-take workshops make this fear seem justified. Answers to these questions may depend on several factors. One is quality of the centers advisory services. Clearly the most important task of the advisor is to guide teachers in identifying their needs and in finding solutions to them. A second factor simply may be the experience of center members. Teachers in well-established centers who are used to having a voice in their educational affairs need not feel threatened by outside partners and by what these partners have to offer. As Gage (1977) suggests, teachers will

welcome new products and procedures if they can decide whether the products and procedures are worthy of inspection and trial and if they have an active role in modifying and applying the ideas. Collaboration of such matters will be an important source of insight.

A third concern is incentives. What kind of incentives should a center use? The kinds of incentives commonly used include credits toward salary increases or licensing, hourly stipends, and release time. Both Devaney (1977) and McLaughlin (1977) suggest that release time is the most ellective incentive because it permits teachers to work during school hours and also indicates district support of center use. Related is the question of whether a center should stirve to recruit clientele other than those teachers that are eager to participate. The idea of voluntary participation seems fundamental to the concept of teacher centers. Many "unreachable" teachers may avoid centers because they fear the unknown, fear being evaluated, or recall bad training experiences. Here the best recruitment strategy may be the successful operation of centers, their increasing prevalence as a "standard" approach, and the dissemination of the nonevaluative philosophy of teachers centers. Devaney's optimism is appropriate here:

> It would be silly to maintain that all teachers are eager, self-renewing students of their profession and practiced inventors of custom-made curriculum. But the vast lot of teachers want to do their job better, and they understand that a successful lesson is not simply an expert's packet of subject matter, but a blend of subject matter, the student's learning status and style, and the teacher's teaching style. Teachers' centers show that it is not visionary to expect ordinary teachers to work hard and voluntarily, provided they can get help in revamping their own curriculum (p. 19).

Research on, and Evaluation of, Teachers Centers

There has been little research or evaluation of teachers centers. The sparse data that do exist have been collected by surveys, questionnaires, interviews, and informal or formal observation. Measures of student perceptions or outcomes appear in only a few reports (e.g., Corno, Stayrook, & Maddox, in progress; Caldwell, 1977).

One of the most extensive studies was carried out by Chittenden and his colleagues at Educational Testing Service (ETS) in 1972. This study,

summarized by Devaney (1977b), and Lickona and Hasch (1976), was based on in depth interviews with 60 teachers using teachers centers in New York City. Devaney (1977) emphasizes the findings that teachers who could articulate connections between their own curriculum priorities and the existing curriculum were better able to use informal and manipulative curriculum materials than teachers whose curriculum goals simply focused on learning facts and good behavior. Lickona and Hasch (1976) also stress the ETS finding of a relationship between the teacher's conceptual learning and the teacher's orientation towards the center. Teachers who came to centers to solve an immediate problem engaged in mostly "make-and-take" activities and only seemed to gain discrete bits of information. These teachers also reported trying to implement a greater number of ideas, but with little attention to student reactions. Teachers who approached centers for general purposes were likely to have a longer contact with the centers, express more confidence about their professional roles, implement selectively, and evidence a progression from "make-and-take" concerns to conceptual learning and reflective thinking.

Caldwell (1977) conducted a pertinent training experiment with 72 preservice elementary and secondary teachers. The experimental group attended a 2-3 day workshop, on specified teacher competencies, held in a teachers center. They also received specific supervision of their use of the competencies throughout eight weeks of field-based teaching experience. In addition, half of the control group and half of the experimental group received a videotaped feedback session on their within-class teaching. Measures used were a paper and pencil test on knowledge of the competencies, and rating by the supervisors, observers, students, and teachers on in-class demonstration of the competencies. Results showed no differences between the "teacher center" and control group teachers on any measure, with the exception that students gave more favorable ratings to control teachers. Observer ratings did show, however, that teachers who received videotape feedback manifested more desirable skill behavior than those who did not, regardless of whether the teachers belonged to the "teachers center" group or the control group.

Both of these studies illustrate shortcomings found frequently in the research on teachers centers. The ETS study relies solely on teacher self-report data. Such data provide valuable information that did indeed indicate some interesting results. Yet these findings are not as persuasive as they would be if additional corroborating kinds of information had been reported. Observations of teachers in actual classroom situations would make an important addition. Also, the results of the study do not inform the reader about the relative advantages or disadvantages of teachers centers because no comparison group was used. Interviews and observations of teachers participating in other kinds of staff development programs might illuminate what special features of teachers cencers, if any, facilitate better approaches to curriculum and instruction. The Caldwell study, while employing observational measures and a control group, is weak because the treatment and sample do not represent the emphases of most teachers centers. A brief one-shot workshop does not allow one to generalize about the effects of cooperative environments that strive to offer long-term services.

What guidelines can the existing research on teachers centers offer for the future organization and planning of centers? The answer must be "very little." A review of several studies, such as that by Lickona & Hasch (1977), suggests that center-involved teachers have favorable attitudes towards centers, that their teaching approaches and curriculum materials become more varied, and that long-term involvement with a center is more beneficial than short-term involvement. Such findings are useful and all to the good. Beyond them, we would benefit from knowledge about the particular or general features that produce these reported changes. We also need to know whether some centers do a better job than other centers or other training approaches, and whether the benefits of a teacher's involvement in teachers centers transfers to student growth. The importance of eventually collecting measures of student achievement and attitudes of many kinds deserves special attention. Devaney (1977b) argues that the move toward anecdotal and observational evidence rather than performance data is a welcome and realistic response on the part of researchers. "Such evaluation is consonant with the purposes of most teacher's centers--to improve

teachers' sense of coping in the classroom, of resourcefulness, and of decisiveness" (p. 165). This view may be defended as reflecting reasonable and modest criteria for center effectiveness. To ask more of centers, especially at this stage, is comparable to insisting that the introduction of refresher training for a country's physicians should be reflected immediately in a decline in the country's death rate or an improvement in the country's percentage of trouble-free births. In the long run, such effects may materialize for teachers centers but we should not insist on them impatiently. This seems perhaps to be a short-sighted, even egocentric, view. To depict teachers centers at this point as serving the needs of teachers only seems to deny the fundamental purpose of the educational system: to promote student growth. But, it is exceedingly difficult to trace pertinent student growth convincingly to any influence as distant in its impact as centers are from pupils. Eventually, teachers and evaluators may be able to formulate research approaches that will measure center effects on pupils. In the meantime, it seems adequate and reasonable to seek effects on teachers' performances and attitudes.

Teachers no doubt have their own hypotheses about the relationships between the kinds of things they learn in a teachers center and the kinds of effects these things will have on students. Revealing these hypotheses to researchers and collaborating on an evaluation plan would begin to make possible the testing of these hypotheses. Teachers also can engage in frequent self-evaluations by measuring specific kinds of growth in individual students. Self-evaluation tools, including teacher-developed assessment instruments, should be on the agenda of teachers centers. The ability of a teacher to measure her own effectiveness in terms of student growth seems a necessary component of any teacher education approach that aims to capitalize on the teacher's professionalism.

Conclusion

This chapter has presented an overview of the teachers centers movement. Particular attention has been given to the kinds of guidelines and resources--the "how to" information--available to those who are interested in initiating or improving teachers centers. It seems apparent that most of the history and evidence for teachers centers belongs to the future. This statement conveys the hope that the teachers center movement is not merely another

"bandwagon" that will soon disappear into the annals of the history of teacher education. Rather, there is reason to believe that teachers centers are an important advance in the effort to find a satisfactory approach to inservice teacher education. The approach consists of an organizational shift toward teacher control of a profession-oriented environment. This control is the best assurance of a satisfied and effective clientele--teachers themselves. Along with this control comes the responsibility to engage in self-criticism and to collaborate with others--such as college and university faculty members, evaluation specialists, and school administrators--who have useful skills. This responsibility befits a profession.

Chapter IV. THE FUTURE OF PRACTICE IN TEACHER EDUCATION

We have taken a fairly close look at the possible approaches to diagnosis of needs for training, the forms that practice can take, and the teachers center as a medium through which inservice teacher education, including its practice component, can be conducted. In this final chapter, we need to make some judgments concerning what promising paths teacher education can take in the years ahead.

Our concern here is not with the governance of teacher education but with its substance. The problems of governance are unquestionably important. Who makes decisions concerning what kind of teacher education goes on, what problems it deals with, what conditions it operates under, and similar issues, depends on the outcome of struggles for power between teachers' unions, other organizations of the teaching profession, school boards and administrators, state and federal agencies, university- and college-based teacher educators, and other contenders for influence. Much writing has been devoted to these matters of governance (King, Hayes, & Newman, 1977; LoPresti, 1977; Messerli, 1977; Spencer & Boyd, 1977, Wallace, 1977), and a recent volume (Cushman, 1977) has traced its many facets historically and analytically.

The present monograph has dealt instead with the questions of what is available to teacher education--whatever centers of power determine its course--when it comes to providing teachers with the practice that everyone agrees is essential to the teacher's acquisition and enhancement of his or her art. Whatever ideology, or conception of good teaching, prevails in a given school system, it will remain empty verbiage unless its adherents become able to act upon it in their work with students. And they will not acquire or improve upon that ability without opportunities to do more than read, write, or talk about those ways of teaching. However important ideas and verbal foundations may be, they cannot suffice. The basic distinction between knowing that and knowing how reminds us of the need for practice whenever we give a moment's thought to axiom that teaching is not merely an art but a performing art. Teachers must speak aloud and move, unlike the writer or the painter. They must perform in ways not altogether predictable, unlike the actor, the dancer,

or the musician. They must respond to and interact with other persons and hence cannot possess sole control over what they do and say, what ideas they deal with, what contingencies they face, what problems they confront, or what solutions can be reasonably offered. To handle the essentially unpredictable elements in teaching requires inevitably that teaching be dynamic, flexible, and adaptive.

And what is true of teaching applies equally to the preparation and development of teachers. Teacher education must be equally dynamic, flexible, and adaptive. It must be equally a matter of performance as well as of the verbal transaction with ideas.

Thus, whatever the fate of the specifics of our treatment of diagnosis, practice, and teachers centers, it seems inevitable to us that the essentials of our effort must survive. If what we have considered as ways of diagnosing teachers' needs turns out to be unworkable or inappropriate, some other ways of meeting the needs for diagnosis will be required. Our treatment brought to the fore a good sample of what behavioral scientists, especially psychologists and educational researchers, have devised as diagnostic procedures and approaches. If teachers and teacher educators working in colleges or teachers centers find them useful, the unavoidable need for determining where a teacher should expend his or her effort at self-development will have been met. The suggested techniques may need to be changed to make them take less time, cost less, become more flexible, fit needs or capabilities more closely, or pinpoint needs more accurately and specifically. If so, the present suggestions will nonetheless have served to stimulate or illustrate the kinds of diagnostic methods that eventually do the job for a given program or center of teacher education. We obviously expect no radical departures from the array of techniques we have brought together, simply because we would have included such altogether different alternatives if we had known about or conceived of them.

The same is true of what we have offered by way of training methods. They should also be expected to need modification and adaptation to the needs of any particular teacher education situation. But again, we expect no radical departures simply because the collection of ideas we have presented represents the best we presently know about.

Further, our emphasis in this effort has been placed on feasibility and probable effectiveness, not on novelty. Feasibility has been judged in terms of rough ideas about the amounts of money likely to be available for teacher education in the years not too far into the future. If those estimates prove to have been overly conservative, and if substantially larger sums become available, it may become realistic to begin thinking about alternatives as expensive as those used in, say, medical education or the training of airline pilots. But we have not considerable such possibilities here.

Similarly, our emphasis on probable effectiveness has been based, in most instances, on the results of actual tryouts of what we have proposed and discussed. The empirical research on those tryouts is seldom definitive. The techniques of providing practice do not come to us with guarantees of their effectiveness. No evaluation of a training method or practice technique has been invulnerable to challenges to its validity. Usually it is possible to invoke the possibility of something other than the practice technique to account for the reported changes in teacher behavior. The Hawthorne effect, if nothing else, may have effected the change. The changes observed during training may not transfer to the classroom. The mere process of looking for changes in teacher behavior may be suspected of having induced changes.

Nonetheless, the effectiveness of techniques for providing practice in teaching--especially in new ways of teaching--is not less well supported by trustworthy evidence than are the techniques used for providing practice in other professions. Medical education has no proof of the value of dissection in the anatomy laboratory--proof of the kind demanded of microteaching. Legal education has no convincing evidence of the transfer effects of moot court experiences--evidence of the kind we seek concerning minicourses. Engineering education has not demonstrated the value in real-life professional practice of the ability to solve problems in the strength-of-materials laboratory--at least not in the way that researchers on teacher education have been expected to demonstrate the value of giving teachers feedback from students or adult observers who have rated their teaching.

Thus, teacher education as a field has perhaps been too critical of its own techniques for providing practice. Self-criticism is, of course, desirable in any field. But the effect of self-criticism in teacher education may have been to demean what, by the standards of evidence applied in other kinds of professional education, should be regarded as altogether acceptable techniques supported by altogether acceptable evidence of their effectiveness. Teacher education should not set standards that are so high as to result in its own inevitable deprecation in the eyes of the general and professional citizenry that supports education.

Having advocated more reasonable and less perfectionistic evaluations of our practice techniques, we must nonetheless point to the need for improved connections not only between practice techniques and teacher performance but also between teacher performance and student achievement and attitude. The latter kind of connection should logically be established first. It is time for the right hand of teacher effectiveness research (which deals with process-product relationships) to inform more intimately the left hand of teacher education research (which deals with relationships between teacher education and teacher performance).

Finally, we see the teachers center movement as betokening the advent of the kind of social mechanism that will make acceptable to teachers the kinds of diagnosis and practice here discussed. That mechanism is still evolving. We have noted the several varieties of teachers centers now on the scene. The variety of systems of beliefs and values underlying the centers has been attended to. The respective advantages and disadvantages of the alternative bodies of ideas have been taken into account. The different kinds of centers need not conflict with one another. Interaction between believers in technical skills of teaching, or performance competencies, and believers in the importance of the teacher as a whole person will, in our view, result in the realization that both points of view have considerable merit. Just as ideologues in the behavioral sciences lose their purity when they attack real-life problems in the clinic or the community, so intellectual accommodation is likely to occur when teachers of different camps come together in the teachers center. The centers will

not, we hope, become bastions organized to admit only votaries of one approach to teaching and to exclude those holding variant opinions. The problems of improving teaching are likely to provide central points of mutual concern around which reasonable syntheses of values, assumptions, and approaches to teacher education may develop.

A final word on outlook: The systematic teacher training model with which we began has evolved into something which is no less systematic for being eclectic. The model has taken ideas from wherever they could be found, so long as they had a fair promise of serving the practice component of teacher education. Although we have exploited the literature and research, we can make no claim to have exhausted the ideas and findings of the field. The present effort should be regarded as an extended illustration--or model--of what a system of teacher training could become.

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